Recent Knowledge OF THE SPLEEN.

A Lecture delivered to the Manchester Medical Students' Club on Jan. 15th, 1925,

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THE story I have to relate opens somewhere about the place where the Atlantic becomes the Carribean Sea, and in the last days of 1921, when, on the deck of the R.M.S. *Victoria* of the Pacific Steam Navigation Company, three of the passengers might have been seen engaged in practices which were, to say the least of it, unusual among the habitués of ocean liners. For Prof. Meakins, then of Edinburgh, now of Montreal, Mr. Doggart, of King's College, Cambridge, and myself were parading the deck, our noses firmly clipped, breathing from rubber bags which we patted and shook the while. By and by we sat down and transferred the ritual of patting the bag to another, but before we ceased from inhaling the "vapour" of the bag a small sample of our blood was taken for analysis. In other words, the blood volume was being measured. The bag contained oxygen, but with it a certain measured amount of carbon monoxide. The carbon monoxide was in time practically all absorbed in the lung by the blood-stream, through which it was distributed, so that if the amount of carbon monoxide in each cubic centimetre of blood was ascertained (which can be done from the sample), and if that amount be divided into the whole quantity absorbed from the bag, the quotient gives the blood volume. So much by way of description of the method of Haldane and Lorrain Smith as we used it.

But although the story commences with our entry into the Carribean Sea, we had made measurements on ourselves before leaving Europe, and on such rare occasions as the weather permitted of, had done the same on our voyage—we were bound for the Andes—but hitherto our determinations had been consistent; now they seemed to be going wrong in the case of each subject; apparently, the blood volume was increasing. Moreover, it was not simply the quantity of fluid that was gaining, but the hæmoglobin in circulation was mounting up also. This was a most disconcerting circumstance, because our ambition was to study the alterations in the hæmoglobin wrought by high altitudes; for this study it was necessary to obtain a sea-level base line, and now our base line was slipping from us. However disappointing it might be, there was no escape from the facts. Up went the blood volume day by day; up went the hæmoglobin, and this went on until we reached the Panama Canal, when a change took place, and the tide of hæmoglobin—so to speak—commenced to abate. By the time we reached Callao both the blood volume and the hæmoglobin in circulation were above the normal figures, but much below the Panama maximum. What was the explanation? Was it some error in our instruments or was it a real phenomenon, and if the latter were true, what was its significance?[1]

INCREASE IN BLOOD VOLUME WITH INCREASED TEMPERATURE.

We had been using but one method for the analysis of the blood—it is always bad to be dependent on one method—coming back we used three. In general the results were the same, though not so clear cut. Of course, having been at all sorts of temperatures and altitudes we were in a less stable condition. Inadvertently this word has slipped out which I had reserved for emphasis—"temperatures"; for it was remarkable enough that the curve of our blood volumes ran almost parallel to that of mean temperature of our cabins—rising as we approached the tropical heat of Central America, falling as we entered the cooler "Humboldt current" on the West Coast of South America. Were we right in supposing that temperature was the cause, not something coincident with the vascular changes which interested us? The matter was not difficult to test subsequently at home. Two colleagues, Drs. Davies and Fetter, offered themselves for the purpose. Each lived for three days in the glass room which forms part of the equipment of the Cambridge Physiological Laboratory. The season was one of snow; the temperature of the glass room was maintained at 90–95° F. day and night. The blood volume was measured independently by Dr. Davies, Prof. Meakins, and myself. The changes were just such as had taken place at sea and now clearly were due to rise in temperature. The physiological significance is clear enough; large cutaneous vascular areas are opened up in response to the heat, the blood to fill them must come from elsewhere, and as "elsewhere" may have need of it, it is desirable to have a volume of blood commensurate with the size of the vascular bed.

But I must repeat it was not merely the amount of water in circulation which was influenced by temperature—a matter with which Barbour has already dealt.[2] It was the total amount of hæmoglobin. The mystery was: "Whence came this outpouring of hæmoglobin'? It was not credible that the bone-marrow could have provided the body with new corpuscles at the rate required. Moreover, there was no evidence of increase of immature corpuscles in circulation on the way home from Peru, and only on the third day of the Davies and Fetter experiment—but quite definitely then—was there evidence for increase in the immature (reticular) erythrocytes.

THE BODY'S HIDDEN STORE OF HÆMOGLOBIN.

The question then was forced upon us: Has the body any considerable but hidden store of hæmoglobin which can be drawn upon in case of emergency? Note the two adjectives "considerable" and "hidden." Let me pass to the consideration of the latter. "A hidden store," in the sense I use the term, must mean a store to which carbon monoxide has no considerable access in, say, 20 minutes inhalation of quantities of the gas not too large to be readily tolerated by the central nervous system.

In searching for a locality which might fulfil such a condition one naturally seeks in the first instance for some place where the red blood corpuscles are outside the circulatory system—some backwater outside the arteries, capillaries, and veins. There is only one such place of any considerable size in the body—that place is the spleen. There the general mass of the spleen pulp is laden with erythrocytes. To what extent may these be said to be in circulation? About the time of which I speak Dr. Duncan Scott was making measurements of the volume of the blood in rats.[3] His measurements were made by the carbon-monoxide method, and I have to thank him for the permission which he granted me to investigate the spleens of these animals. Although the blood in the general circulation at death contained a very high percentage of carbon monoxide, the hæmoglobin contained in the spleen pulp contained practically none. This observation was confirmatory of one made by Heger[4] to which little attention has been paid—namely, that in some persons who died of rapid inhalation of carbon monoxide the hæmoglobin of the spleen pulp was almost devoid of contamination with that gas.

RELATION OF THE SPLEEN TO THE SYSTEMIC CIRCULATION.

The quest of the spleen as a storehouse for red blood corpuscles outside the circulation seemed to be worth following in a more systematic manner, and with the assistance of Henry—of the same ilk—I[5] determined

to find out how long it required for the carbon monoxide to penetrate in spleen, and when and if the carbon monoxide did enter the spleen pulp, how long it remained there after it had been cleared from the general circulation. Our work was continued by Hanak and Harkavy and by de Boer and Carroll. I may deal with the two papers together. The following statements may be made.[6 7]

1. In rabbits breathing air which contains 0·1 per cent. CO there is a lag of about 20 minutes, more or less, between the time at which the blood contains a certain percentage of CO hæmoglobin and the time at which the erythrocytes in the spleen pulp acquire the same percentage.

2. After the hæmoglobin in the spleen pulp has attained to an equilibrium with that in the blood, if the rabbit be taken out to the air containing carbon monoxide and placed in air free from that gas, the spleen pulp retains the carbon monoxide much longer than the general circulation, so that upwards of an hour may elapse between the time at which hæmoglobin of the circulating blood drops to a certain CO saturation and the time at which the hæmoglobin in the spleen pulp falls to the same saturation.

3. If the animals—cats, rabbits, guinea-pigs, and rats—be placed in air containing a much lower percentage of CO, such, in fact, that the blood in the general circulation does not become more than 20 per cent. saturated with carbon monoxide, the CO may not penetrate at all into the spleen pulp, the hæmoglobin in that situation remains entirely free from the gas for as much as four hours. This phenomenon, which is confined to resting animals, is very important, because it shows that in those animals the spleen pulp is cut off entirely from such circulation as may be taking place in this organ. It shows also that the rhythmic contractions which we are accustomed to associate with the life of the spleen either do not take place during normal circumstances of rest in the body, or if they do, the changes in volume are so small as to trench only on the volume of the blood in the vessels. It is clear that if there were any rhythmic ebb and flow of corpuscles between the circulation and the spleen pulp, the carboxyhæmoglobin must enter the pulp with the corpuscles which contain it.

4. It is the resting animal that I have been discussing; in the active animal it is otherwise. Take up a rabbit by the ears and if it kicks about, as very likely it will, the carboxyhæmoglobin will penetrate at once into the spleen pulp, so that in five minutes the pulp will acquire a percentage of hæmoglobin which five hours would not suffice to give it were the rabbit at rest. The opening of the storehouse door is functional.

MECHANISM OF THE SPLENIC CONTRACTIONS.

5. At this stage something must be said about the mechanism of the splenic contractions. Whilst it is true that CO does not readily enter the spleen pulp, it is also true that a very small quantity of carboxyhæmoglobin in the blood will cause some contraction of, as opposed to peristalsis of, the spleen. This contraction is not the effect of carbon monoxide on the spleen itself, but of carbon monoxide on the central nervous system. It would be more correct to say that it is the effect on the central nervous system of a reduction in the amount of oxyhæmoglobin in circulation. Thus if the spleen of an animal be connected to the rest of the body solely by the nerves, all other connexions being severed, and if it be perfused with blood from an artificial circulation, the spleen will contract if carbon monoxide be given to the animal, but it will not contract as the result of introducing carbon monoxide into the blood with which the splenic circulation is supplied.

Carroll and de Boer made it quite clear that the material wrung from the spleen was largely corpuscles, because the CO content of the blood in the splenic vein, drawn during a contraction, was intermediate between that of the splenic artery and the spleen pulp—e.g.:

Percentage COHb Content of Hæmoglobin.

	Arterial.	Spleen pulp.	Splenic vein.
Exp. 4	11	0	7
,, 5	15	2	8
,, 6	30	3	13

Let us review the situation up to the point at which we have arrived. We started with the underlying idea that if the body were deprived of blood by a diversion of that fluid to the skin in a warm climate, the blood volume would increase and the necessary corpuscles might be extruded as an emergency measure from the spleen. We have seen that administration of carbon monoxide which reduces the quantity of oxyhæmoglobin in circulating blood will make the spleen contract, and as mere deficiency of oxygen in the inspired air will do the same we are justified in asking whether the spleen is, in fact, a reserve of red blood corpuscles—a place where, if not wanted for the transport purposes of the body, they may be "parked" till some emergency arises which demands an increased number of vehicles of oxygen transport.

THE SIZE OF THE SPLEEN IN THE LIVING BODY.

Yet any suspicion that the spleen can have more than a purely academic function in contributing hæmoglobin from its store to the general circulation raised the question: What size is the spleen? The answer is far from apparent. In any anatomy book some such statement occurs as that the human spleen weighs from 4–10 oz.—i.e., from 110–275 g. But this is the dead spleen. The question is forced upon us: What relation does the bulk of the living spleen bear to that of the dead organ? In search of an answer our group had recourse to the X rays. It is not possible to see the spleen in a radiogram, and, being in no way an X ray expert, I consulted Dr. Dale as to whether at the National Medical Institute he had any experience of methods by which otherwise invisible organs can be thrown into relief. Such, for instance, as the blowing of gas into the abdomen. I would like here to record our thanks to Dr. Dale for a most valuable suggestion—namely, that small pieces of metal might be attached to the edges of the spleen in a preliminary operation and, as their position could easily be seen on the radiogram, an idea of the size of the spleen could be obtained. For the purpose we have used metallic sutures which are easily clipped on to the edge of the organ at suitable points. The operation is very easy; the animals in all cases make rapid and quick recoveries.

Two types of experiment have been carried out by Drs. H. A. Harris, Orahovats, Weiss, and myself.* The first may be regarded as preliminary, and have been conducted with a pre-war X ray plant in the Cambridge Physiological Laboratory; the latter, which are much more exact, were conducted in the department of anatomy, University College, London. Fortunately the changes in size are sufficient to give a value to the preliminary series, though one would only accept them in the light of the more exact data. The X ray apparatus at Cambridge only projects rays from below upwards. Consequently in order to get an idea of the position of the sutures in the body it is necessary first to look at the animal when on its stomach and then when on its side. This practice is vicious for several reasons: (1) there is some displacement of viscera in orienting the animal; (2) neither the sutures nor the screen is the same distance from the bulb when the animal is in one position as when it is in the other.

But the method, as a preliminary one, is very convenient for rabbits. It is easy to make numerous observations measuring the distances apart of the suture-shadows on the fluorescent screen with dividers and not the changes which occur by inspection.

* For the success of the results we owe much to Mr. Melville, Technical Assistant in Prof. Elliot Smith's department.

When a definite issue has presented itself the animal was moved up to London and the point proved or disproved by the taking of radiograms by Dr. Harris in the department of anatomy at University College. The installation there admits of ¼ second exposures. From the radiograms taken in two planes one can reconstruct the organ in three planes of space.

The investigation of the size of the spleen during life resolves itself into a comparison between the living and the dead spleen. The latter, of course, we can weigh. This comparison has been carried out entirely by orthodiagrams. The following procedure has been adopted. Two radiograms are taken in the lateral and antero-posterior planes, with an exposure of ¼ second, one half second being sufficient for the change over from one tube to the other. The animal is then killed in some suitable way; another pair of radiograms are taken shortly after death and a third pair next day. The body is then opened, any adhesions are noted, and the spleen taken out and weighed. From the films prints are made and the following reconstruction takes place. The print from the side (such as those shown in Fig. 1, but of the original size) is laid on a flat paraffin block. Through the point at which the teeth of each suture meet a sewing needle is driven into the wax. This needle is vertical and into the eye is tied a thread. On the view from the back is measured the distance of each suture from the middle line of the animal (or from some convenient line parallel to the middle line) and the needles are driven into the wax until the top of each needle is as

FIG. 1.

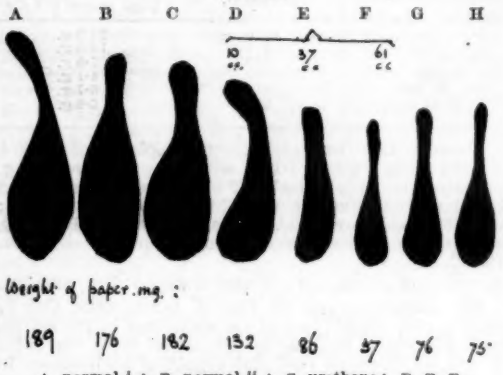
A B

Metal sutures indicate the contour of the spleen. A, after mild exercise. B, at rest.

far from the surface of this wax as the corresponding suture is (on the print) from the middle line of the animal. A piece of soft copper wire is now adjusted to the tops of the needles, being tied to each by the thread and so a wire figure is made which delineates the edge of the spleen. This structure of wire is used as a template; from it an area is traced on paper or sheet lead bent to fit its curvature. This area is then cut out and if flattened would represent the surface which the spleen would cover if taken out of the body and laid on the flat. Of course, the alteration in area of this surface, as between life and death, only represents the change in the size of the spleen in two planes of space. There is no reason from the musculature of the organ to suppose that the thickness of the spleen is more or less involved than the length or breadth, and therefore one may form a crude idea of the changes in volume by taking the square roots of the superficial areas of the lead models (or of the weights of the models) and cubing these square roots. If the weights, as representing the surfaces, are used, of course care must be taken to see that the sheet lead (or paper) of which they are made is of uniform thickness.

Fig. 2 shows a number of such areas taken from the spleen of Cat 1. Of these the first three and the last two are those which concern us. The first two are

FIG. 2.



A, normal i.; B, normal ii.; C, urethane; D, E, F, hæmorrhage; G, after death; H, following day.

from the resting cat at observed different times, a week apart. The cat was bled to death within an hour or two of taking the second; the last two were after death, one immediately after, the other the day after. Similar records were taken from Cat 2. In each case the post-mortem weight of the spleen was 6·6 g. The following are the calculated weights corresponding to the records. Cats 3 and 4 were drowned (Table I.).

TABLE I.—*Weight of Resting Spleen (Grammes).*

Cat.	Weight post mortem observed.	Weight just after death computed.	Weight at rest computed.	Mode of death.
1	6·6	6·7	26·4 24·1	Hæmorrhage.
2	6·6	6·5	19·8	,,
3	10·0	11·8	22·0	Drowning.
4	12·1	12·3	31·2	,,

In the case of the cats given above it is calculated, therefore, that the spleen in the living cat is two to four times as heavy as that in the cat which has been bled to death or drowned, the loss of weight during the operation being from 10–20 g., a very appreciable fraction of the blood volume, which would be from 100–150 c.cm. To the latter fact I will return; here I emphasise the striking phenomenon that the living spleen may in the cat be four times the size of the "anatomical" or "post-mortem room" spleen and about 1 per cent. of that of the animal.

EFFECT OF HÆMORRHAGE ON SIZE OF SPLEEN.

The mention of hæmorrhage leads us to some other considerations. If the spleen is to be regarded as a sort of bank of red blood corpuscles in which they are stored in large numbers and from which they can be thrown into the currency of the circulation on demand, the spleen should respond to two calls which have not yet been considered; of these the first is hæmorrhage, in which oxyhæmoglobin is removed from the circulation; the second is exercise in which the utilisation of the hæmoglobin is much increased. Let us consider first the question of hæmorrhage. Cat 1 was not bled to death in a single bleeding but in a succession of bleedings and under urethane. Fig. 2 shows the reconstructed "spleen-surface" after each bleeding. In this case the urethane had little effect on the size of the spleen, but on hæmorrhage it contracted down until in the death-agony the spleen was only one-sixth

of its original size. After death it expanded somewhat; presumably the muscular fibres relaxed, but in the absence of any considerable circulation the expansion could not be very great (Table II.).

TABLE II.

Hæmorrhage.	Relative weight of spleen.	Calculated actual weight. Dead spleen = 6·6 g.
0	1000	24·3 g.
10	604	14·5 g.
37	320	7·8 g.
61	167	4·1 g.
Dead.	273	6·7 g.
Next day.	271	6·6 g.

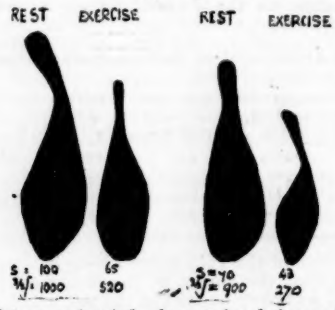
During the hæmorrhage the spleen of Cat 1 shrank from 24·3 to 4·1 g., squeezing out over 20 g. of material. This material, if blood, would correspond to about one-sixth of the blood volume of the cat; if red blood corpuscles, to about one-third of the corpuscles. Quite similar results were obtained on Cat 2.

EFFECT OF EXERCISE ON THE SIZE OF THE SPLEEN.

The picture shown in Fig. 3, taken from Cat 1, show a very simple case of the shrinkage of the spleen with exercise; the photos are taken from the side. It will be observed that this aspect of each suture is nearly the same in both pictures, and therefore evident approximation of the suture-shadows represents, though not quite quantitatively, the approximation of the sutures themselves.

The manufacture of models from these lateral pictures and the corresponding antero-posterior ones taken from the back gives us the second pair of surfaces shown in Fig. 3. The first pair were from

FIG. 3.



Showing reconstructed spleen surface before and after exercise in Cat 1.

Cat 1 a week earlier. Remembering that the dead spleen of the same cat weighed 6·6 g. we can form an estimate of the weights of the spleens before and after exercise. Similar data were obtained from Cat 2 (Table III.).

TABLE III.—*Estimated Weight of Spleen.*

—	Rest.	After exercise.	Shrinkage.
Cat 1 (*a*)	26·4	13·7	12·7
,, (*b*)	24·1	7·1	17·0
,, 2	19·8	9·9	9·9

Here, again, we see that with exercise which was not at all severe the spleen can squeeze out 10–17 g. of something which may be blood, or may even be mostly red corpuscles. In the latter case 17 g. of corpuscles would correspond to about 40 c.cm. of blood, or blood equivalent to about one-third of a quarter of the total blood volume of the cat. Similar but less striking results were obtained from rabbits.

The last specific point to which I shall address myself is this. Can it be shown in point of fact that the possession of a spleen really makes any tangible difference to the organism? Well, I suppose the greatest difference which anything can make to it is the difference between life and death. Can we, therefore, think out any set of circumstances in which animals without spleens would die where animals with spleens would, on the whole, survive? Such a circumstance might be a certain degree of hæmorrhage, but more easy of experimental proof is a certain degree of carbon monoxide poisoning. Several experiments were performed in which guinea-pigs of three categories were exposed to coal-gas.[9]

The three categories were: (*a*) normals; (*b*) those in which the abdomen had some omentum or pancreas had been removed in the neighbourhood of the spleen; (*c*) those in which the spleen was removed. In a typical experiment three animals of each category were placed simultaneously in a chamber and the gas tap turned on. The times of death were noted and also the percentage saturation of the blood with carbon monoxide at death. Briefly, it may be said that the fatal percentage of carbon monoxide in the blood of all the guinea-pigs was the same. On the whole the animals in category B died a trifle sooner than those in category A, whilst the splenectomised animals died markedly sooner than either (Table IV.).

TABLE IV.

—	A. Normals (18).	B. Operated controls (16).	C. Splenectomised (17).
Mean percentage of COHb in blood at death	83·3	83·5	83·3
Longevity in gas expressed in a percentage of A ..	100	93	74

Control experiments of another sort were made. The animals were exposed not to carbon monoxide, but to hydrocyanic acid—a gas which does not poison by making a demand on the hæmoglobin in circulation. In this case no difference could be detected between the longevity of the normal guinea-pigs and that of the controls in the hydrocyanic acid.

It is not intended that the views which I have put forward should compete with the current teaching about the functions of the spleen; rather they render it more intelligible. I have no wish, for instance, to deny that the spleen is an important cemetery for red blood corpuscles any more than I have to tilt against anyone expressing the view that London is the largest cemetery in England, but I think that, according to the above experiments, the blood volume should be regarded not as aliquot part of the body-weight, but as a physiological variable which is adjusted to the work required of it, and to the size of the "bed" which it occupies, and of the spleen as being, not a "ductless gland," but a definite part of the vascular system. It has a function entirely in conformity with its muscular structure, being in fact a reservoir of corpuscles at once fitted by its reticulum to detain them and by its musculature to expel them when required to do so. Finally we are enabled to arrive at an intelligible estimate of when and why the body is likely to "vent its spleen."

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THE TREATMENT OF PURPURA HÆMORRHAGICA BY SPLENECTOMY.

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THERE seems to be a considerable difference of opinion as to the prognosis in cases of purpura hæmorrhagica or the *morbus maculosus Werlhofii*. Some view the condition as trifling, others as quite hopeful, and others as often terminating fatally after a more or less prolonged course. There are certain reasons for these discrepancies.

The term purpura hæmorrhagica has been employed by some writers to cover several conditions, and by others to denote one particular type of bleeding disease. Some text-books define purpura hæmorrhagica as an idiopathic disease in which purpuric eruptions are associated with hæmorrhage from a mucous membrane. More modern books use the term to signify an idiopathic disease in which hæmorrhage from mucous membranes and petechiæ are prominent features, and in which the blood shows essentially a thrombocytopenia—i.e., a diminution in blood-platelets. It is only within recent years that any exact differentiation has become possible. With the aid of modern methods of blood examination it has become possible to define one particular type by a combination of clinical history, physical signs, and certain blood tests, and to this type the name "essential thrombocytopenic purpura hæmorrhagica" has been applied by American writers. Despite the obvious drawbacks to such a title, we have adopted it (and shall refer to it in this paper as E.T.P.H.), as it leaves no room for confusion and effectively isolates this from the other forms of purpura. This differentiation becomes a matter of prime importance if splenectomy is to be considered as a method of treatment.

Clinical Conditions.

Thrombocytopenic purpura hæmorrhagica is essentially a disease of early life, although it may occur at any age. It begins commonly between the ages of 2 to 15 years. It would appear to be a primary disease. There is no hereditary tendency, there is no known constitutional or local disease associated with it, and in the acute cases, which tend to a natural recovery, there are no sequelæ. It will be seen that many forms of purpura, those associated with a family tendency and those which are secondary to or associated with some manifest disease, are thus ruled out. The onset is the same as in purpura simplex—namely, the appearance of a crop of purpuric spots or bruise-like marks in some part of the body. In some cases a sudden epistaxis may mark the onset as noted by the patient, but examination at this time will usually show the presence of purpuric spots or ecchymoses in some part of the body.

As many acute cases tend to a natural recovery, with, without, or in spite of treatment, we shall confine our attention to the chronic relapsing cases, which are the only ones in which treatment by splenectomy would be considered. The usual history is one of fresh hæmorrhages recurring from time to time, and lasting for a few days or weeks. Between attacks there are intervals of from a month to three or six months. The hæmorrhage referred to is usually epistaxis. The skin hæmorrhages do not attract so much attention, but they also vary in extent at different times. Hæmorrhage from a mucous membrane does not yield readily to any treatment, and usually ceases spontaneously. In the case of epistaxis plugging of the nostrils has often had to be resorted to. Direct transfusion of blood may lead to a temporary cessation of the bleeding, but the effect soon passes off, and bleeding of a severe type recurs. Clinical observers have come to the conclusion that in severe cases no reliance can be placed on blood styptics, or sera, or any medical remedies employed in other forms of hæmorrhage. Whatever be the form of treatment the result is the same—the bleeding stops of its own accord, and not as the result of outside agents. It will be found that recurrences of the hæmorrhage take place irrespective of any known preventive treatment, and that these are determined by the alterations in the blood present in and characteristic of this disease. Recurrent, intractable, and often alarming hæmorrhages are amongst the leading features. Oozing about the gums is common, especially when the patient brushes the teeth. Epistaxis is the commonest and outstanding form of hæmorrhage from a mucous membrane. Other sites of hæmorrhage may be in the stomach and bowel, in the kidneys and urinary passages, in the vagina, and sometimes in the brain or meninges.

The onset and progress of the disease are characterised by a singular absence of symptoms of discomfort or ill-health. The patient will probably never complain of anything until the progressive anæmia leads to symptoms. The causes of the anæmia are two-fold, first the underlying changes in the blood, and secondly the loss of blood from recurrent hæmorrhages. Many cases run a prolonged course, lasting sometimes for years, in which, apart from the pallor, languor, tiredness, &c., accompanying the anæmic condition, one cannot find any distinctive symptoms. This absence of symptoms becomes a valuable aid in diagnosis.

On physical examination petechiæ are seen, fresh crops of which come and go. They are usually small and discrete and remain so. We have not met with the larger type of purpuric eruption, such as is common in Henoch's purpura, in which the effusion takes the form of raised hæmorrhagic nodules or urticarial wheals. The petechiæ are most abundant in the lower extremities, but may appear anywhere, often in the mucous membrane of the mouth. Ecchymoses are usually found if the child has been up and running about. The ease with which these ecchymoses are produced from very slight injury and the extent of the resulting hæmorrhage form striking features in this disease. The only other change to be noticed is an enlargement of the spleen. This does not usually attain to any great dimensions and would appear to vary considerably from time to time, and it is probable that an active stage of the disease is accompanied by an increase in size of the spleen, along with an outbreak of fresh purpuric spots and hæmorrhage.

The Blood Tests.

An ordinary blood examination will show the presence of a secondary anæmia varying with the severity of the disease. There are three outstanding features in connexion with the blood which help to differentiate this disease.

1. *A Great Diminution in the Number of Blood Platelets or Thrombocytes.*—In normal human blood the blood platelets average from 150,000 to 300,000 per c.mm. In this disease the number is greatly diminished, falling in different cases to 40,000, 20,000, 5,000, or there may be no platelets at all. This is regarded as so important and characteristic a feature that the term thrombocytopenic has been incorporated in the name of the disease.

2. *Prolongation of the Bleeding Time.*—The bleeding time is determined by puncturing the ear and noting the time during which blood continues to flow. In healthy conditions this will be from two to four minutes. In E.T.P.H. the bleeding time is prolonged to 10 or 12 minutes, and in severe cases may last from 20 minutes to many hours. It is not claimed that this prolongation of the bleeding time is peculiar to

purpura hæmorrhagica, but it is not present in purpura simplex, Henoch's purpura, or hæmophilia. It is rather difficult at first sight to understand why, when the coagulation time is normal, the bleeding time should be prolonged. This difficulty is explained by Duke as follows. Hæmorrhage is not stopped by a clot but chiefly by intravascular plugs (thrombi). A clot is formed from blood at rest and the coagulation of fibrinogen is the essential factor. A thrombus, on the other hand, is formed from blood which is flowing, and for its formation a certain number of platelets is indispensable. Platelets adhere to any injured point in a blood-vessel and are deposited there in enormous numbers by the blood as it flows past, until, finally, thrombosis is complete. It is easily conceivable that an almost entire absence of platelets from the blood should lead to abnormality in the initiation or completion of thrombosis, and be a cause of prolonged hæmorrhage, whether the fibrin-forming elements were normal or not.

3. *Non-retraction of the blood clot* is rather a striking feature. Normal blood will clot readily en masse, and in 20 minutes the clot will be definitely contracting, and within an hour will be firmly contracted and surrounded by the expressed serum. In this disease, while the blood clots in the usual way and in the normal time, no retraction takes place, even if it remains standing for hours. It is evident that some constituent of the blood is lacking—namely, as stated above, the blood platelets. Confirmative evidence of this is supplied by the fact that when the blood platelets reappear in sufficient number in the blood, for example after splenectomy, the clot again becomes retractile and the bleeding time normal.

Diagnosis.

For the exact diagnosis of E.T.P.H., and from the point of view of treatment by splenectomy, it seems advisable that both the clinical phenomena and the blood tests should be found to correspond with the picture outlined above. The recorded cases which have been successfully treated by splenectomy show a great similarity in clinical history, clinical findings, and blood reactions. There is no single symptom or blood test peculiar to this disease. It is the symptom-complex which enables one to differentiate the special type, and when an operation like splenectomy is on trial for one form of hæmorrhagic disease it seems very necessary to limit its application to that type and not to employ it indiscriminately for other forms of purpura.

Pathology.

Recent studies on purpura hæmorrhagica have thrown some fresh light on the old problems. It has long been disputed whether a purpuric eruption was due primarily to an altered condition of the capillaries or to an altered condition of the blood. The escape of blood from the capillaries, with or without slight traumatism, was supposed to indicate an underlying friability or permeability of these vessels. In the case of E.T.P.H. it is clear that the prolonged bleeding time and the absence of clot retraction cannot be dependent on any changes in the vessel wall. That an abnormal permeability of the capillaries is present in E.T.P.H. is shown by the capillary resistance test. This consists in applying a tourniquet for a couple of minutes round the upper arm with a pressure sufficient to lessen, but not entirely stop, the flow of blood in the arteries. In a few minutes a crop of petechiæ appears over the limb below the constriction.

Probably the outstanding factor amongst the blood changes is the diminution in the number of blood platelets, the so-called thrombocytopenia. The fact seems to be that if the blood platelets are reduced below 40,000 per c.mm. in place of the normal 150,000 to 300,000, a tendency to purpura is at once produced, and is increased as the platelets diminish further in numbers. The presence of a sufficient number of platelets seems to be necessary to prevent capillary leakage (petechiæ) and also in connexion with the normal clotting of the blood. Hence in E.T.P.H. the prolonged bleeding time and the non-retraction of the clot are supposed to depend on some constituent of the blood, which has been removed with the platelets, and which is probably produced by the platelets.

The importance of a sufficiency of blood platelets has been shown experimentally. Duke was able to produce the clinical signs of purpura hæmorrhagica (petechiæ, prolonged bleeding time, and non-retractile clot) in rabbits by reducing the platelet count with diphtheria toxin. In the treatment of cases of purpura hæmorrhagica by direct transfusion it has frequently been found that the hæmorrhages ceased coincidently with an increase of the platelet count. Hæmorrhage recurred when the platelet count fell again, usually a matter of a few days. It seems now to be generally accepted that a condition of thrombocytopenia is directly and causally associated with purpuric manifestations. The recognition of this association does not imply the acceptance of any extreme views, such as that the sole cause of purpura is a thrombocytopenia or that purpura hæmorrhagica is invariably accompanied by a small platelet count. The one point of progress in the pathology is the differentiation of a type of disease—namely, thrombocytopenic purpura hæmorrhagica.

Another advance in our knowledge was the recognition of the fact that the spleen played a part in the production of E.T.P.H. So far no one has been able to prove that the spleen has any beneficial function, nor have bad effects been traced to its removal in certain forms of disease. On the other hand, we have now much evidence of the evil results following on disease, or, to be more precise, disordered action of the spleen. In splenic anæmia and in acholuric jaundice we have examples of disordered action of the spleen. This action takes effect on the blood and is of a destructive character, affecting more especially the red cells and the hæmoglobin. In E.T.P.H. there seems to be another type of disordered action in the spleen, which takes effect more especially on the thrombocytes and leads to a great diminution in their number. Whether the platelets are actually destroyed by the spleen or are merely withdrawn from the circulation and stored up in the spleen seems still uncertain. In some cases of splenectomy for E.T.P.H. the blood in the spleen has been found to contain many more platelets than red cells.

It may naturally be asked, Why incriminate the spleen in connexion with these blood platelet changes and purpura hæmorrhagica? A bold man, Frank of Berlin, held the view that the spleen inhibited the formation of platelets and suggested its removal in purpura hæmorrhagica. A bolder man, Kaznelson of Prague, was of opinion that the spleen destroyed the blood platelets in purpura hæmorrhagica and proceeded to remove it. His patient was completely cured of all symptoms and has continued well. In the United States, Brill, Rosenthal, Murray Bass, Cohen, and others, have employed splenectomy in this disease with excellent results. It has been proved by these workers that whatever the exact rôle of the spleen may be in E.T.P.H. it certainly is a very important one.

The whole subject of the relationship between E.T.P.H., the blood platelets, and the spleen requires further elucidation. It is not definitely known whether the spleen (1) inhibits the bone marrow formation of platelets (Frank), or (2) removes the platelets from the circulation (Kaznelson), or (3) alters the nature and agglutination properties of the platelets (Brill), or (4) removes abnormal platelets produced by abnormal megacaryocytes (Seeliger). It is clear that the spleen is directly associated with the great diminution of platelets in the blood in thrombocytopenic purpura hæmorrhagica, because after splenectomy they soon reappear in normal numbers, and there is also found a restoration of the normal bleeding time and clot retraction. The fact that the spleen is enlarged in

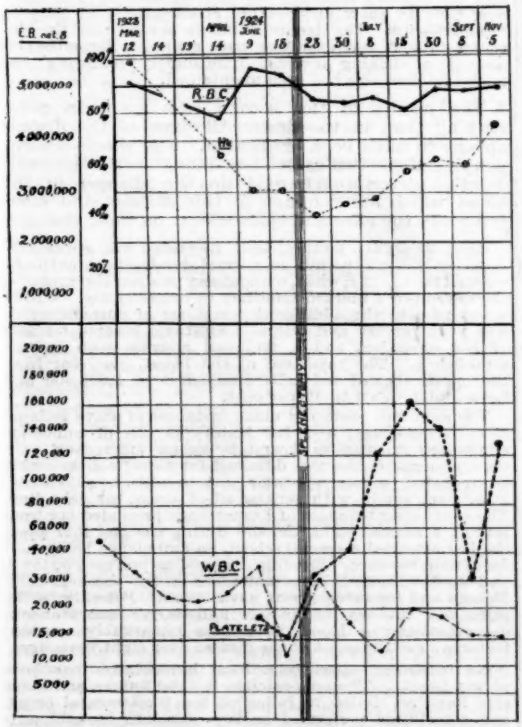
this disease can usually be made out on clinical examination and is always evident when splenectomy is performed. So striking have been the results of splenectomy in E.T.P.H. that the duty of pathologists now is not to question the direct action of the spleen in this disease, but to determine the exact change or disturbance in the spleen leading to thrombocytopenia, and also its cause.

Treatment by Splenectomy.

So far as we are aware no cases of purpura hæmorrhagica treated by splenectomy have been recorded in this country. The following cases have been under our care recently, two of which were considered suitable for splenectomy. A study of the literature of the subject shows that the operation is by no means devoid of risk in this disease. The physician ought to have sufficiently clear indications for splenectomy and see that the time selected is the best for the patient. In the two cases operated on it was considered that the general health of the patient was suffering, and that radical treatment was required. Both patients had suffered from severe recurrent epistaxis, one for six months and the other for three years, and were confined to bed owing to the anæmia and debility. At the time of operation there was no active epistaxis or other internal hæmorrhage going on. It certainly seems advisable, although it may not be necessary, to operate during an interval between the recurring attacks of active bleeding. The presence of petechiæ and the tendency to bruising do not seem

CHART 1.

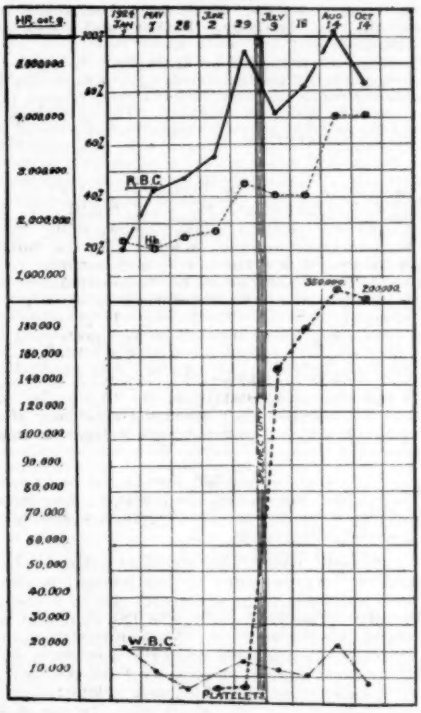
Operation, June 19th, 1924.



to be of prime importance, as they are more or less constantly present. As all forms of active movement tend to increase the hæmorrhage, it was considered advisable to give the patients a month's rest in bed before the operation. Transfusion of blood seems to be regarded in America as a useful preliminary, but we did not employ it. The third case was not considered suitable for operation because active epistaxis had ceased for nine months and the general condition was satisfactory. In the recorded cases of operation the platelet counts vary considerably, and some

CHART 2.

Operation, July 3rd, 1924.



writers describe a fall to the previous low level after a temporary rise. In our cases, as shown in the charts, the number of platelets rose markedly after operation, and never reached the former low level. All the blood examinations in our cases were made by Mr. Herbert Perkins, who used Bedson's method for the platelet count.

Case Records.

CASE 1.—E. B., female, aged 8 years, presents a typical history of purpura hæmorrhagica. She first came under notice in July, 1921, for profuse epistaxis and hæmatemesis which occurred spontaneously without any antecedent symptoms. Prior to this abrupt onset there had been no actual hæmorrhage, but a tendency to be easily bruised is said to have existed for some time. The chronicity of the disease has been an outstanding feature, and we have records of nine admissions to hospitals for serious hæmorrhage with collapse during a period of three years. Remissions undoubtedly did occur, as is evident from the condition of the blood in March, 1923, in the second year of the illness (vide Chart 1). On many occasions her condition was extremely grave, and so precarious was it from January to June of last year that she was bedridden in hospital on account of repeated hæmorrhages.

Petechiæ and ecchymoses have been constantly present, occurring in crops in the skin and mucous membrane of the mouth. Large extravasations have been found in the loose tissues of the eyelids, and on one occasion a spontaneous subconjunctival hæmorrhage took place. The retinæ have never been involved. The purpuric rash could not be detected by touch, and no urticarial element has been noted. Epistaxis and hæmatemesis constituted the grave

dangers. During the first half of last year severe epistaxis occurred about every third week, hæmatemesis was less frequent, melæna was a common finding, but the urine was always free from blood. The resultant anæmia was essentially of the chlorotic type (Chart 1). The hæmoglobin was often reduced to 40 per cent. The red cell count always maintained a high level despite the depletions by hæmorrhage, and this indicated a vigorous erythroblastic reaction in the red marrow. In type the red cells were immature. The most striking feature of the blood was the marked thrombocytopenia, the highest count being 18,000 per c.mm. Evidence of the anæmia was present in the generalised pallor, to which was added a definite yellow tinge, well seen in the conjunctivæ. Much soft subcutaneous fat was present all over the body. Fatigue and dyspnœa were easily induced.

The diagnosis presented no difficulty. No cause for the hæmorrhages could be discovered. The spleen was usually palpable with ease and varied considerably in size. Hæmophilia could be definitely excluded. The special characteristics of the blood in purpura hæmorrhagica were all present and constant: (1) thrombocytopenia, (2) prolonged bleeding-time (about ten minutes), (3) clotting-time normal with non-retractile clot, and (4) capillary pressure test positive.

In June of last year the patient was transferred to us from an infirmary where she had been confined to bed for six months. Her condition was extremely serious. Epistaxes had been so numerous that a nasal plug was practically always in use. Her resistance to infection was very low. There were excoriations about the nares, styes were present on the lids, and the teeth and gums were in an unhealthy condition. A state of chronic invalidism was established.

On June 19th, 1924, splenectomy was performed by Mr. John Murray. The loss of blood at the operation was no greater than normal. The recovery was uneventful and healing occurred by first intention, the scar later showing keloid characteristics (as in Case 2). The spleen weighed two and a half times the normal and externally presented a normal appearance; on section the Malpighian corpuscles were prominent to the naked eye. Microscopically the striking features were the great diminution in the number of lymphocytes, and the marked endothelial proliferation in the Malpighian bodies and the sinuses. The connective tissue of the sinuses was swollen and hyaline. Blood platelets were not in evidence.

The present condition of the patient shows a remarkable improvement in her general health, and she now leads the ordinary active life of a child with her family. The yellow tinge in the skin and watery fat are no longer evident. No external hæmorrhage in any form has occurred since the operation five and a half months ago. Petechiæ and bruises still occur but to a less extent than formerly. The blood condition as indicated on the chart steadily progresses to the normal. The bleeding-time is about two to three minutes and the clot contracts firmly and expresses clear serum.

CASE 2.—H. R., male, aged 9 years, presents a shorter history than the previous case. He was a perfectly healthy, sturdy boy until December, 1923, when the disease first made its appearance. The initial symptom was the development of a tendency to bruise readily on the slightest injury. Inquiry failed to disclose any constitutional disturbance of any kind. Since the onset the patient has been under constant medical supervision and has spent most of his time in hospital.

During the first two months of 1924 the disease was at its height. He became subject to spontaneous hæmorrhages in the form of epistaxis and purpuric manifestations. Melæna was a frequent finding and hæmatemesis occurred on three occasions. Petechiæ and ecchymoses, presenting the same characteristics as described in the previous case, became constant and prominent features in the skin and mucous membrane of the mouth. The retinæ showed no involvement. Profuse epistaxis at times proved very intractable to treatment, and occurred every second or third day. Within a month of the onset the patient was profoundly anæmic. The red cells were reduced to 1¼ millions, and the hæmoglobin was down to 20 per cent. His condition was extremely grave and caused much anxiety. Complete rest in bed was essential.

The succeeding three months saw a gradual amelioration. The intervals of freedom from hæmorrhage steadily increased from days to weeks, and he was able to take moderate exercise. The danger of hæmorrhage was always present and necessitated very careful supervision. The blood condition improved greatly, especially with regard to the red cells as indicated on Chart 2. A careful examination failed to locate any source of infection. The spleen was found to be moderately enlarged and easily palpable at the left rib margin. The mouth was rendered more healthy by the extraction of carious teeth, and the sinuses were thoroughly examined for signs of sepsis with negative results. Cultures from the fæces produced no significant factor, and intestinal parasites were not found.

Hæmophilia could be eliminated. Repeated examination of the blood revealed all the characters of purpura hæmorrhagica: (1) The thrombocytopenia was very marked; (2) clotting occurred in the normal time of five minutes, the resultant clot being ill-formed and non-contractile; (3) bleeding-time was prolonged to 12 minutes. The capillary pressure test in this case gave negative results. Externally he exhibited the same appearance as the previous case. A definite yellow tinge in the skin and conjunctivæ and much soft, watery adipose tissue were present. Petechiæ and ecchymoses occurred daily in large numbers. No serious loss of blood had taken place for a month. Fatigue and dyspnœa were readily induced by slight exercise and his activities were greatly curtailed. The blood condition showed a steady increase in his red cells, the other features remaining unchanged.

Splenectomy was performed on July 3rd, 1924, by Mr. John Murray. The operation was entirely successful and, as in the first case, there was an absence of any excessive bleeding. Convalescence was interrupted by an attack of acute appendicitis, which was treated by operation. Both scars later showed keloid characteristics. The morbid anatomy of the spleen, which was enlarged to three times its normal size, showed changes identical with those described in the previous case. Thrombocytes were not in evidence. A lymph gland removed from the mesentery at the time of operation also exhibited marked endothelial proliferation.

The general health of the patient is now excellent, and he has returned to the normal active life of a boy of his age and attends school again. Despite the loss of much fat, his weight has increased by 2 lb. No hæmorrhage in any form has occurred since the operation five months ago. The skin has been free from any purpuric manifestations and the bruising tendency has entirely ceased. The blood now fails to show any feature characteristic of purpura hæmorrhagica. The bleeding-time is normal and the clot contracts well and expresses clear serum. Thrombocytes showed a striking increase immediately following the operation, and this has been maintained.

The results in this second case are even more striking than in the first. All signs of the disease appear to have been eradicated. The charts accompanying these two cases show more clearly than any detailed description would do the changes in the blood which are common in this disease, and more especially the effects of splenectomy on these changes.

CASE 3.—Z. H., female, aged 13 years, was apparently a perfectly healthy child of normal development until she reached the age of 4, when, without any prodromal symptoms, she developed a marked tendency to bruise easily. Within a few months the additional symptoms of purpura which was very profuse and frequent epistaxis became features of her condition, and a profound anæmia soon became established. The condition of the blood, one year from the onset, showed red cells diminished to 3,030,000 and hæmoglobin down to 40 per cent.

The next four years saw many instances of grave collapse from hæmorrhage, and her history is one of numerous admissions to various hospitals as an emergency case. On one occasion she was detained for three months owing to repeated severe epistaxis. A condition of chronic invalidism set in with serious effect upon her schooling. The ever-present danger of hæmorrhage precluded her from leading a normal child life, and during the last four years she has attended a special school, an ambulance being used for her conveyance. Bleeding occurred as profuse epistaxis, and we have records of hæmatemesis on one occasion only. Melæna and hæmaturia were never found. Petechiæ in the skin and mucous membrane and larger subcutaneous extravasations of blood have been remarkably constant features since the onset of the disease over eight years ago.

No treatment apart from local hæmostatics has been of any benefit. Thymus, calcium lactate, human and horse sera have all failed to influence the fundamental cause, and transfusion performed on two occasions brought only temporary relief. During the last two years there has been decided improvement as regards the hæmorrhages, which are now less severe and not so frequent. The last attack of epistaxis occurred about nine months ago. The same improvement cannot be recorded with regard to the purpuric rash and the tendency to bruise easily which are still in evidence.

The classification of this case of hæmorrhagic disease presents no great difficulty. The sex and complete absence of any known diathesis in the family history precludes hæmophilia. The blood picture and tests conform in the main to those of purpura hæmorrhagica. Only two complete blood records in this case are available, both taken recently. The thrombocytes numbered 100,000 and later 55,000 per c.mm. The bleeding-time varied from six to ten minutes, and the coagulation-time was found to be normal with good clot retraction on each occasion. The capillary pressure test gave negative results. The red cell count was normal and the colour-index 1. The prognosis would appear to be decidedly hopeful, as there are numerous indications, clinical and otherwise, that the disease is gradually subsiding. The profound anæmia has given place to a healthy appearance, with a blood picture which is practically normal, and which bears only traces of the features upon which a diagnosis of thrombocytopenic purpura is based. Clinically, apart from the bruising and the purpuric rash which are never totally absent, the patient is in good health, and despite the chronicity and severity of the disease in the past, her development is about average, both mentally and physically. Under our advice she is to attend an ordinary school, and the future appears to hold the promise of complete recovery unaided by any active treatment.

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THE PREVENTION AND TREATMENT OF POST-OPERATIVE PULMONARY EMBOLISM.[1]

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THERE is a growing belief that the post-operative lung complications such as pneumonia, pleurisy, and collapse, which have been an endless source of contention and mutual reproach between surgeon and anæsthetist, are not the simple matter of either irritation or congestion and infection that has been alleged. Wharton and Pierson, in the *Journal of the American Medical Association* in 1919, gave it as their considered opinion, after the investigation of 1600 gynæcological operations, that 40 per cent. of cases of pleurisy and 12 per cent. of cases of pneumonia after operation were in reality cases of pulmonary embolism and infarction.

It would be as well at this stage to point out that the size of the embolus is the important factor, and, depending on this, we may distinguish (*a*) the classic type of massive embolism, occluding one or other pulmonary artery, or bestriding the bifurcation and obstructing both (more usually the right is affected, as Rupp has shown); (*b*) the infarction type, with severe onset followed by pleurisy and signs of consolidation; (*c*) the type where the site of the embolus prevents recognition as an infarction on the inner surfaces of the tubes. This type is associated with slight respiratory increase, a slight evening rise of temperature, and the bringing up of small collections of blood and mucus. There is but little mention in English surgical literature of this last type, but De Quervain, Wharton and Pierson, and Lee all recognise its significance and its warning of the more severe types. Two cases of my own illustrate this condition.

The first case—one of duodenal ulcer—was a man of 52, upon whom a gastro-enterostomy was performed. On the fifth day he brought up a little blood and mucus, as he described it, "from the back of the throat." There was no pain in the chest on deep inspiration, but his temperature swung to 99·4° F. for two or three nights. His chest was examined on two or three occasions by a physician, and no physical signs could be detected. We contented ourselves with the old story of a tuberculous focus temporarily lit up (an illusion which I recall in my house surgeon and registrar days as being a commonly cherished one and covering a multitude of sins!). The whole disturbance quieted down, the patient was up and about, when on the eighteenth day he had an urgent desire to defæcate, intense dyspnœa and cyanosis, and expired in five minutes with all the signs of massive embolism.

To digress for a moment, it will be noted that this patient had a sudden desire to defæcate followed by the signs of embolism. My experience has been that this is a common premonitory sign. The ward-sisters at the London Hospital who see these unfortunate accidents occur, state that it is much more commonly the case for a patient to call for a bed-pan and fall back dying, than to have the attack while actually on the pan. The only explanation I can offer is that the clot, moving up from the femoral or iliac vein, sets up a vaso-motor reflex (or it may be a congestive effect) in the sigmoid, which the patient interprets as a need for evacuation of the bowels.

The other case is in a ward at London Hospital at the moment; a man of 26, whose gangrenous appendix I removed, and who went on well until the ninth day, when he brought up the same type of collections of blood. There was no disturbance of the chest at all in this case; my corresponding physician failed to detect any signs, although he knew my suspicion. The evening temperature was swinging up to 100° F. On the thirteenth day definite signs of thrombosis of the veins of his right calf were detected.

Sir Charles Gordon-Watson emphasised the importance of this slight rise of evening temperature; Wharton and Pierson gave it as a constant premonitory sign. Such a type is not common, yet its origin is presumably the same as that of the massive type (*a*). I would reiterate once again that deciding factor, the size of the embolus, in its relation to the result produced.

On looking hurriedly through the literature I was struck by the absence of any really large collection of cases, and also by the fact that there was a general tone of alarm at the increase in the frequency of the condition, an alarm which I hope to show later there is no real ground for. I therefore had recourse to the records of the London Hospital on the subject of the massive embolic type (already referred to as type (*a*)) and found that certain cases of pulmonary infarction (type (*b*)) were also included under this heading. I began by taking all cases of pulmonary embolism in the surgical records from 1914 to 1924, and found that the total for these years was 152, but as the notes for the war years, 1914–18, were scanty and not altogether reliable, and the proportion of autopsies to deaths very much lower, I excluded 38 cases occurring in those years, leaving 114 cases.

Incidence.

It has been a matter of comment that the condition is on the increase. I certainly shared the impression when in one year among my private patients I had two cases of infarction and one of massive embolism, all three perfectly clean cases. And I notice that Sir Charles Gordon-Watson had a similar experience.[2] Some surgeons state that about 1916 they began to notice the increase in these tragic complications of operative surgery. In the war we saw practically none

[1] Being a contribution to the discussion at the Royal Society of Medicine reported on p. 333.

[2] See THE LANCET, 1924, ii., 345.

of them, and the reason is clear now that it is generally recognised, as Mr. Lockhart-Mummery has stated in his address[3] to the Section of Surgery at the B.M.A. meeting in Bradford, that sepsis is only an incident in its production, and that the principal factor is venous stasis in patients of advancing years. One eminent physiologist has advanced the theory that there has been a change in blood character and coagulability, possibly depending on national food. About 1916 we were certainly feeling the full force of the importation of foreign albuminoids, such as Chinese eggs and American bacon. Certainly the figures over the whole 11 years would indicate that the numbers are greater since the war; at the same time, the numbers of each year since the war remain about the same. It is probable that the old diagnoses of sudden heart failure and shock after operation included a fair proportion of massive embolism cases.

In the series presented here, there are five fractures, three carcinoma cases, and one prostate case, in none of which operation was performed. There were, in addition, nine cases of sepsis, carbuncles, abscesses, &c., in which simple incision only was made. The post-operative list is thereby reduced to 96 (and this, I think, may be accepted as the mortality from this source) in 31,426 operations for the years 1919–24, which works out at 0·3 per cent. This agrees fairly closely with Rupp's figures published in the Berlin *Archives of Clinical Surgery*, March 21st, 1921. He found, as the result of the investigation of 22,689 operations from 1903 to 1920 inclusive, a mortality of 0·26 per cent. from pulmonary embolism, a difference of only 0·04 per cent., or 1 in 2500. From the figures of 1919–24 at the London Hospital we may fairly conclude that its frequency remains much the same. It must be remembered, however, that with the large increase in the number of operations performed, the absolute mortality to pulmonary embolism will naturally rise.

Lest it should be thought that surgery is mainly responsible for cases of pulmonary embolism, it is of interest to recall here the collateral figures which were published by Rupp from 13,000 autopsies over the same period of 18 years. He found that the mortality from pulmonary embolism in internal disease without operation worked out at 1·1 per cent.—that is, four times as great as that following operation.

The Age Factor.

On analysing the series on this point, a highly important fact emerges—that is, that massive embolism is a disease of later life. The average age for this series was 52; for some diseases it was higher. The urinary bladder and prostate operations worked out at 60. Even appendicitis cases showed an average age of 40·4 years, and, considering there were included three cases whose ages were respectively 2½, 11, and 13 years, the average age of the remainder can only be considered as a very late age for acute appendicitis to occur. The average age of cases of hernia suffering this complication was 53.

If, further, we examine the frequency in different types of operations (and I may say here that the short time at my disposal has not allowed of the complete analysis of 31,000 operations) we find that in stomach operations 21 occurred in 2778 operations; in major gynæcological operations (excluding obstetric cases) 22 in 2004; in appendix cases 17 in approximately 4000, and hernia 12 in 1967. In other words, as in other published series, gynæcological operations head the list. All groups show that it is the older cases in which this complication occurs. This may be some explanation of the apparent increased frequency, as there is no doubt, with the perfected technique and team-work of recent years, age has not been considered the great contra-indication to operation that it once was.

[3] THE LANCET, 1924, ii., 344.

Site of Thrombus.

Post-mortem examination has revealed thrombosis in 42 per cent. of cases in the veins of the pelvis and lower extremities, 50 per cent. of which were in the left iliac or left common iliac vein. Wharton and Pierson agree with this when they state that 41 per cent. of cases are associated with femoral phlebitis. In gynæcological cases, thrombosis of the pelvic, iliac, and femoral veins was found in 47 per cent., and in the stomach cases thrombosis of similar veins was discovered in 57 per cent. of cases. It can definitely be said that this is lower than would have been the case if full post-mortems had been allowed, and not the abdomen only, as is so often the case in death after abdominal operations. I have mentioned these two types of operation, specially as one is portal and the other systemic. In none of the notes of the post-mortems examined was there any mention of extensive thrombosis in the area of operation. In many of the cases crossed thrombosis occurred. As has been noted above, the left common iliac vein accounts for 50 per cent. of the cases in which a thrombus was discovered. Presuming that stasis is one of the most important factors, with the sigmoid and the rectum emptying themselves irregularly, or with the aid of enemata, it is possible that there is a greater stasis on the left side. The less direct drainage of the left common iliac vein may be a further factor. The time when embolism took place after operation in this series averaged out at the tenth day for stomach, appendix, &c.

The Anæsthetic.

As the operations were practically all carried out under general anæsthesia, ether or its mixtures, I have no information as to the effect of anæsthesia. The question of primary pulmonary thrombosis has been discussed at length by Prof. Glynn, and commented on by Mr. Lockhart-Mummery and Sir Charles Gordon-Watson.[4] Prof. Glynn claimed that of his 35 cases death was due in 30 to primary pulmonary thrombosis. While admitting that it may be responsible for a certain proportion of cases of sudden death after operation, and more especially by cerebral emboli, I think it is difficult to reconcile the high percentages of known sources of thrombi in this series with such an explanation. The size of the thrombus, similar to that of the big femoral or iliac veins, its frequently unbranched appearance, its considerable length (as much as 8 inches in one case and of very nearly equal diameter throughout), the fact that it is nearly always rolled up, seem to me to be strong arguments in favour of a thrombus formed elsewhere than in the lungs. Rupp says the embolus is nearly always in the right lung. Finally, the pulmonary artery, though carrying venous blood, is arterial in type to support the pressure of the ventricle, and it would seem unusual for a thrombus to be loosened and advance against the blood-stream. The experience of all, I think, goes to show that the embolus is loose and coiled up. It has a thin external shell of lamination, and a core of red unorganised clot.

Summary.

(1) There is no evidence, from a consideration of statistics, that the condition has relatively increased. (2) Age is a most important factor in its production, the average age in the series being 52 years. (3) The primary thrombus formation occurs in the veins in which there is marked stasis—namely, the pelvic and femoral veins. In this series, in 42 per cent. this thrombus was discovered. (4) Sepsis is probably only a contributory cause, acting by lowering the vitality of the patient, and therefore promoting stasis. Why thrombosis should occur in conditions of stasis in the aged and not in the young, seems to me to be a problem for the physiologist rather than for the surgeon, and when that has been discovered we shall be nearer to a method of prevention of this complication.

[4] Ibid.

"POST-ANÆSTHETIC" VOMITING.

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IT is now nearly 15 years since a surgeon's remark led me to make careful inquiry into the after-condition of upwards of 1000 patients to whom I had given anæsthetics, excluding only short cases.[1] The results were as gratifying as unexpected, for I found that in about three-fifths (including many administrations lasting an hour or longer) there was no after-sickness, and it was inconsiderable in the majority of the rest—there having been only 23 (about 2 per cent.) in whom it was continued or severe. As every variety of patient and operation had been comprised, and no special methods employed, my conclusions were as follows:—

1. Whilst it can by no means be denied that an anæsthetic badly selected or badly given may be the direct and sole cause of severe after-vomiting, sickness even to a slight extent is *not* necessarily a result of an administration, and should not occur in a marked degree unless there are conditions which have exaggerated its effect or independently caused the disaster.

2. That severity of vomiting is *not* in proportion to mere length of administration, but depends mainly on the individuality of the patient, the nature of the operation and of the disorder for which it is done, and after-complications.

3. That when it occurs, instead of assuming that the anæsthetic is answerable, other possible causes should be carefully considered and the anæsthetic only admitted as such by a process of exclusion.

It seems advisable again to draw attention to the subject, for the experience gained during this period has confirmed my conclusions, but, judging from discussions and recently published books, its practical importance has not been realised either by surgeons or anæsthetists. In my former articles I gave full statistics and other details, to which I beg leave to refer those who are interested in the question. In these I also considered the causation and management.

In regard to individuality, I should like to quote from a paper by my former teacher, Sir D'Arcy Power[2]: "Just as some people are always sea-sick or train-sick while others are not, so some always vomit after an operation and others do not." Personal peculiarities unquestionably cause remarkable differences in behaviour during induction, and it cannot be expected that after full anæsthesia has been endured an abnormal person—whether sensitive, overfed, or otherwise—will make a normal recovery.

The Effect of Some Operations and Complications.

It has always been recognised that the functional importance of any structure or organ, and its anatomical and physiological connexions, materially affect, after an operation upon it, certain results, e.g., pain and spasm; but there has been a curious inability to recognise—one may venture to say a reluctance to admit—the extent to which gastro-intestinal and pulmonary complications may be thus produced. If one considers that the viscera in or adjacent to the upper abdomen are not only of much and continuous functional importance, with far-reaching connexions, but are also in close relation with the diaphragm, the action of which has been shown to be temporarily inhibited by an operation in its region,[3] one would expect gastro-intestinal atony and nausea to follow, for example, one on the kidney much more than one on the uterus, and such I found to be the case. I have been told that the late Mr. Clinton Dent, in his lectures on surgery, used to say that sickness always followed removal of the cervical glands; this confirms a statement made to me by the matron of a children's hospital. If in the course of a mastoid operation the labyrinth is touched, retching is liable to occur at once, although the anæsthesia is deep enough to prevent it during other proceedings, and it is liable to occur afterwards if this structure is involved.

I have many times been asked to see patients in whom sickness after an anæsthetic was taking place to an abnormal extent, with which it was agreed after discussion the anæsthetic had little or nothing to do. For instances: in a girl, found in an over-heated, ill-ventilated room, menstruation had come on a few days before expected, and her relatives stated that she was "always bad and often sick" at these times. A lady complained also of an unpleasant taste and smell; after removal of iodoform packing from a cavity in the jaw there was no more sickness. Examination with the ophthalmoscope at my suggestion after operation on a mastoid gave evidence of commencing thrombosis of intracranial sinuses, from which the patient died a day or so later. After an abdominal operation (by a surgeon now deceased) there was much vomiting, for which the anæsthetist (not myself) was blamed; some stitches gave way, and an anæsthetic for replacing them was needed; it was then discovered that the first operation had been an incomplete one.

A physician called to deal with acute vomiting attributed to an error in diet would hardly risk making a serious mistake by accepting such an explanation without further inquiry and strict examination. Post- (non ergo propter-) anæsthetic disorders may, like fatalities under anæsthesia, be due entirely, in part, or not at all to the anæsthetic.

The Need for Preparation and Diagnosis.

The result of an impression still prevalent—that vomiting usually and inevitably follows the inhalation of an anæsthetic (except a momentary one of nitrous-oxide) is that prevention and treatment are too often perfunctory and ill-directed.

If it were possible to insist that all patients before operation should submit to appropriate general and special preparation, instead of, as is not unusual, entering a hospital or nursing-home "overnight," there would often be saving of time, trouble, expense, and even danger. In subjects of various forms of malnutrition, auto-toxæmia and neuroses, after-effects are apt to be out of all proportion to the length or gravity of the operation. Although we are still without certain knowledge of "acidosis" or "post-anæsthetic toxæmia," it seems established that, whilst an anæsthetic (and especially chloroform) may be the determining cause, it depends also on antecedent conditions which may be to some extent remediable.

It is unfortunately the case that some authors of books on anæsthetics fail to urge that, when after-vomiting is excessive, all possible influences must be taken into account, and if the "personal idiosyncrasy" cannot be eliminated there must be discrimination between its many varieties; thus one may aim at a rational plan of treatment, instead of that admitted to be "purely empirical" and "usually somewhat unsatisfactory": and by repeating a stereotyped list of sedatives and domestic remedies which "have been tried with apparent success at one time and failure at another," as commonly happens when treatment is nothing but symptomatic.

In conclusion, it may be remarked that anæsthetists, especially Dr. Dudley Buxton,[4] have urged that better opportunity should be afforded them than is usually arranged for examination of the patient beforehand. It is equally if not more desirable, that

[1] THE LANCET, June 17th, 1911, and Oct. 25th, 1913.
[2] Practitioner, July, 1920.
[3] Pasteur: Medical Society of London, May, 1911.
[4] THE LANCET, August 6th, 1910.

when there is an unsatisfactory condition afterwards, for which the anæsthetist may be held blameable, or it may be, legally responsible, he should, in conjunction with the operator, investigate the circumstances and advise as to management. By fuller coöperation these disorders will be better understood and more often avoided, or, if they must happen, more effectively treated. The anæsthetist's responsibility will be increased rather than diminished, because it will be more accurately defined.

TYPES OF TUBERCLE BACILLI

AND THE EPIDEMIOLOGY OF PHTHISIS.

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THE statistical inquiry into the epidemiology of phthisis pulmonalis in Great Britain, conducted by Brownlee, and published in the Special Report series of the Medical Research Council, is perhaps one of the most arresting studies of the disease in recent years. As a result of the investigation, Brownlee succeeded in demonstrating three clear-cut statistical types of the disease.

The first of these, the "young adult" type, shows a maximum mortality in males between the ages of 20 and 25 years; the second, the "middle age" type, exacts its maximum toll, in males, between the ages of 40 and 45 years; while the third, the "old age" type, has its maximum mortality in males between the ages of 55 and 65 years. The distribution of these types is unequal throughout the country, but there are districts in which each of the "elementary" types are found in characteristic form. Thus in Shetland, and to a lesser extent in Ireland, the "young adult" type is prevalent, in London the "middle age" type, and in Cornwall the "old age" type.

Brownlee, after most exhaustive inquiry into the meteorological, geological, sociological, and industrial factors which may account for the unequal distribution found, advances two possible explanations for their occurrence. The first suggestion is that there are "two distinct strains of tubercle bacilli, each having a special age-distribution. One of the strains attacks in early manhood and possibly also in old age, the other in childhood and middle life." The second explanation is that "the physiological response to attack by the organism may be different according to the environment in which the individuals attacked have lived." He is not, however, prepared to accept either explanation as wholly sufficient to account for all the phenomena of the disease, and considers the "double origin" of the disease as more probable.

The first hypothesis throws out a challenge to bacteriological research. In recent years much advance has been made in the bacteriological study of pneumonia and epidemic cerebro-spinal meningitis by the demonstration that "types" of each of the organisms responsible for these diseases exist. The resulting improvement in the efficacy of the specific treatment of these diseases suggests that were the existence of "types" to be demonstrated among tubercle bacilli there might be hope of a corresonding improvement in the specific treatment of tuberculosis in addition to the confirmation of the statistical hypothesis.

It is not merely the demonstration of the classical "human" and "bovine" types of tubercle bacilli that is required, for the part played by these in the ætiology of the clinical forms of the disease has been fairly definitely established. Brownlee deals only with phthisis pulmonalis, and as this is practically always due to the "human" variety of the bacillus, it follows that the "types" postulated by Brownlee must exist therein. It would perhaps be better to speak of them as "groups," in order to avoid the confusion which might arise in view of the already existing use of the term "type" to denote the human and bovine varieties of the bacillus.

Attempts to demonstrate such groups have been few in number. Many difficulties have to be overcome, the chief of which is probably the difficulty of preparing a uniform non-granular suspension of tubercle bacilli. Owing to its fatty and waxy content the tubercle bacillus tends to form clumps when suspended, and as the agglutination and absorption of agglutinin test appears the most satisfactory method for the demonstration of "types" or "groups" in bacteria, it is obvious that this spontaneous agglutination presents a considerable obstacle to the carrying out of such tests. A recent observation is that by Smith, who investigated 11 strains of the human type of the tubercle bacillus. The suspensions used were made homogeneous by long shaking, and the immune sera were prepared by the inoculation of such suspensions into rabbits. He found that the strains fell into three groups, the first agglutinating to the full titre of the serum, the second agglutinating to partial titre, and the third showing no agglutination.

With bovine bacilli out of six strains examined four failed to agglutinate, while two agglutinated partially. No absorption of agglutinin test was employed. The strains used by Smith were mostly stock strains, and their origin was somewhat obscure. The number of strains examined was too small to permit of any definite conclusion being drawn from the results, but the indication was in the direction that "groups" did exist.

Attempts to Differentiate Groups.

An attempt to demonstrate "groups" has been recently conducted on a more extended scale by Tulloch, Munro, Ross, and Cumming. In this investigation 100 strains of tubercle bacilli were first isolated from cases of phthisis pulmonalis mostly in adults. The patients were resident in Glenlomond Sanatorium, Fifeshire, which receives all stages of pulmonary phthisis in both sexes. At the time of isolation no particular attention was paid to the age of the patients, but it can be taken that the various age-groups were adequately represented. Seven of the strains were isolated from children under 13. Among adults, 50 strains were isolated from males and 43 from females. The age of the oldest adult from whom growth was obtained was 63 years. The series, therefore, were representative.

At the time of isolation it was impossible to test the pathogenicity of all of the strains, but 20 of them chosen at random were tested and all exhibited characteristic virulence for laboratory animals. The strains, with two possible exceptions, were all of the human type. These two were not completely bovine in characteristics, but were markedly dysgonic as compared with the remaining strains of the series. In this connexion it is of interest to note that Park and Krumwiede, in 592 strains of tubercle bacilli isolated from cases of pulmonary phthisis, only found one strain which seemed to be of the bovine type. They did not, however, accept it as a typical bovine strain.

The method adopted by Tulloch and his collaborators for the suspension of the bacilli was to extract with acetone and ether for four days in order to get rid of some of the fatty or waxy components, and then to grind up with a drop of 1·4 per cent. sodium bicarbonate, and finally, to suspend in 0·5 per cent. carbolic saline. Fleming and Douglas had previously shown that acetone extraction of the *B. typhosus* did not alter its antigenic qualities, and this observation was extended before proceeding to test the tubercle bacilli. It was shown that extraction by acetone and ether, in the case of *B. typhosus* and *B. paratyphosus* B, did not alter their antigenic qualities, nor did it interfere with their agglutination and absorption of agglutinin in the presence of specific anti-sera. The immune sera could be prepared equally well with a suspension of acetone and ether-extracted bacilli as with a suspension made in the ordinary way.

It was therefore postulated that there was no objection to the use of acetone and ether extraction in the case of the tubercle bacillus, and as the suspensions resulting from this technique were homogeneous and exhibited no tendency to auto-agglutination, all the bacilli examined were extracted and suspended in this manner.

The strains were tested by the agglutination and absorption of agglutinin test and the end-result was that of the 100 strains examined: (1) There was no member which failed to agglutinate in a dilution equal to at least half the titre of three-type anti-sera, by far the greater number agglutinating to full titre. (2) There was no one member which failed to absorb the agglutinins for the type bacilli from their respective homologous anti-sera. (3) The three-type strains employed were equally and mutually agglutinable by their anti-sera, which in turn were equally absorbable by the suspensions of the type bacilli.

Conclusions.

The conclusions drawn from these results are—that the tubercle bacilli isolated from 100 cases of pulmonary tuberculosis all conform to one well-defined serological type, and that while certain small variations do exist, these variations are negligible, being no greater than those found in other monotypical pathogenic micro-organisms. It would seem, therefore, that the statistical postulate of the existence of two groups of human tubercle bacilli still requires proof, and that the present bacteriological evidence is against the idea.

The second explanation advanced by Brownlee is one which has been more widely noted than the first, and some observers have claimed that it can account to a very large extent for the existence of the statistical types of the disease. Cummins has drawn attention to the relative frequency of tuberculosis in isolated and non-isolated communities. He shows that in the former tuberculosis is rare, due to a rarity of the tubercle bacillus, but that should an inhabitant from an isolated area enter an environment in which tuberculosis is common, he exhibits a greater susceptibility to the disease than the native inhabitants. Moreover, the disease in such a subject tends to be generalised, and rapid in its course. He considers that the immunity of the inhabitant of the "tuberculous" environment depends upon an active immunity which has developed as a result of contact with the bacillus from birth. At birth the infant is "virgin soil" and if, in infancy, infection with large doses of the bacillus takes place, the disease will develop in an acute and generalised type. If, however, the exposure is gradual and the infecting doses small, then a condition of active immunity is brought about which increases with every exposure to the bacillus, provided that the inoculation be not in overwhelming doses.

Cummins's explanation of the three types is coloured by his belief in this theory of infection and resistance. He considers that the "young adult" type, occurring as it does in the more isolated parts of the country, is intermediate in type between the "virgin soil" tuberculosis of isolated primitive communities and the "middle age" type occurring in communities where there is much intercommunication, and that the difference in environment and relative frequency of tubercle contamination determines the statistical type developing.

In view of the work of Tulloch and his collaborators the theory gains weight and would seem at present to be the most suited to explain the facts of the case.

References.

1. Brownlee: Medical Research Council, Special Report series, 18 and 46.
2. Smith: THE LANCET, 1922, ii., 13.
3. Tulloch, Munro, Ross, and Cumming: Tubercle, 1924, vi., 18–27 and 57–73.
4. Park and Krumwiede: Jour. Med. Research, 1910, xxiii., 205.
5. Fleming and Douglas: Brit. Jour. Exp. Path., 1921, ii., 346.
6. Cummins: Inter. Jour. Public Health, 1920, i., 137.

Clinical and Laboratory Notes.

AN UNUSUAL CASE OF PENETRATING WOUND OF THE ABDOMEN.

BY J. B. HANCE, O.B.E., M.B., B.C. CAMB., F.R.C.S. EDIN.,
MAJOR, I.M.S.; CIVIL SURGEON, DERA ISMAIL KHAN, N.W.F. PROVINCE, INDIA.

CASES like the one under discussion, where a man lived for five months with a large arrow-head fixed in his abdomen after injury to important organs and recovered from the operation for its removal, must necessarily be infrequent.

The patient, a young Marwat Pathan of about 18 years of age, was admitted to the Civil Hospital, Dera Ismail Khan, on Oct. 27th, 1923, for abdominal pain, worse after food. The history of the case was that, five months previously, in the course of an intra-tribal feud, he had been shot in the eighth right intercostal space in the anterior axillary line with a steel-headed arrow. At the time he grasped the shaft and extracted it, and was carried to his village, where he remained for about four weeks ill. He could not remember if he ever spat up blood, but during this illness respiration was painful. After about four weeks he got up and went about as usual except for attacks of vague abdominal pain, which was aggravated by taking food. His attempts at dieting gave him transitory relief. A month previous to admission he noticed a swelling, which had been tender, in the left epigastric region. He then concluded that part of the arrow had remained behind, and consulted the nearest Government dispensary, whence he was referred to hospital, a journey of some 22 miles by camel.

Condition on Admission.—There was a reddened oval swelling about 1½ in. by 1 in. in the left epigastric region, opposite the tip of the ninth left costal cartilage, and ¾ in. from the costal margin. This swelling was reddened and softened in the centre, but the patient stated that it was not nearly so tender as it had been before he started on his camel ride. He informed me that the feathered shaft of the arrow, complete, was in his possession, but that there was no trace of the steel head. He was put to bed preliminary to X ray examination next day.

During the night of Oct. 27th–28th, 1923, the patient "felt something move inside him," and next morning complained of a severe gnawing pain 1 in. below the left nipple. The patient was kindly skiagraphed for me by Captain H. H. Elliot, M.C., I.M.S. A black linear shadow was visible lying obliquely across the lower ribs. Operation had, unfortunately, to be postponed owing to a smart attack of malaria that evening with rigor and body pains, and on examination benign tertian parasites were found in the blood. Intensive quinine was given and operation postponed in the absence of acute indications. The pulse dropped to 72 with the sweating stage and remained down.

Operation.—Under chloroform anæsthesia an incision 5 in. long, best described in the words of Mr. R. P. Rowlands as a "left-sided Kocher's gall-bladder incision," was made, with the reddened swelling at its centre, and deepened at that point in order to localise any collection of pus that might exist. None, however, was found, the swelling consisting of partially organised granulation tissue, and the abdomen was opened along the length of the incision. On exploring with the hand, the arrow-head could be felt high up in the left hypochondrium pointing downwards, forwards, and to the right, moving markedly with respiration; and, on retraction, could be seen to be either intra-gastric or retro-gastric. The severe pain felt by the patient under the left nipple strongly suggested the former alternative, and the stomach was accordingly turned up and the gastro-colic omentum opened bloodlessly and the lesser sac investigated with the finger. It was then ascertained that the point of the arrow-head was firmly fixed in the posterior fibres of the diaphragm, and the lesser sac was obliterated round it, fairly firmly organised adhesions binding the stomach to the posterior abdominal wall.

The exact anatomy could not be made out, but Fig. 1 roughly represents the condition. It is to be supposed that the point of the fixation was in the neighbourhood of, but above, the left suprarenal capsule. It was thought to be advisable to leave the posterior gastric wall in this condition, and the lesser sac was accordingly closed with a catgut suture and the anterior cardiac end of the stomach drawn as

far as possible into the wound, fixed with Allis's forceps, packed off, and incised. The haft of the arrow-head was felt for, found in the fundus of the stomach, grasped with Mayo-Ochsner forceps and pulled out, and the stomach

FIG. 1.

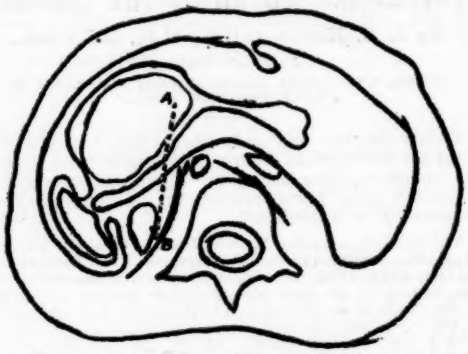

Diagram to show position of arrow-head (A . . . . B).

cavity investigated. Hæmorrhage was fortunately negligible, and the anterior gastrotomy was closed with two layers of fine catgut sutures—through-and-through and Lembert—placed "in reverse." The abdomen was then closed, layer by layer, as recommended by Rowlands, and dressings having been applied, the patient was returned to bed.

The patient was kept on rectal feeds of glucose-soda bicarb. saline for 48 hours, after which peptonised milk was given for a further similar period, when diet was gradually but steadily increased till full diet was reached on the fourteenth day. Skin sutures were removed on the tenth day. The only incident of the convalescence was the necessity for catheterisation for 48 hours after the operation. This was largely temperamental, since the patient evinced marked objection to such novel (to him) experiences as the usual nursing measures. The difficulty, however, was definitely and finally solved by the injection of 1 c.cm. of pituitrin when the bladder was full. An hourly record of the pulse was maintained for 24 hours after operation, and the highest count, 96, was recorded on his return to bed from the operating-room.

Convalescence was uninterrupted, and the patient left hospital cured, and on full diet, on the twenty-first day after operation.

Commentary.

One hesitates to attempt to outline the course followed by the arrow-head, of which Fig. 2 is a

FIG. 2.

Arrow-head and shaft.

photograph, and of which the actual length is 6¼ inches. The position of the entrance wound and the situation in which the weapon was discovered would seem definitely to establish the injury of the following structures: (1) the right pleural cavity, (2) the right dome of the diaphragm, (3) the liver, and (4) the stomach, and it is the strongest possible commentary on the extraordinary vitality of the Frontier tribes that the patient came to the table at all; further commentary, if needed, being afforded by the uneventful convalescence.

My thanks are due to the assistant surgeon, Dr. Bhagwan Dass Dhamija, and to the staff of the Civil Hospital, already overworked, for their unremitting care and attention to this unusual case.

TWO UNUSUAL CASES IN SURGICAL PRACTICE.

BY LESTER SAMUELS, M.D. SHEFF.

THE following two cases—of fibro-lipoma of the kidney and irreducible hernia with colonic band—are, both from their comparative rarity in surgical history and their unusual symptoms, worthy of record:—

CASE 1. *Fibro-lipoma of the Kidney.*—This patient was a well-nourished married woman, aged 46. She was not neurasthenic; non-drinker. Symptoms: Pain left side of abdomen, two years, at times exceedingly severe with vomiting and semi-prostration; no hæmaturia. Frequency of micturition without pain during the severe attacks. Menstrual periods normal; urine normal; occasional severe occipital headaches. Examination: Heart, chest, and nervous system normal; retinæ normal. Fullness of left loin. Smooth tumour felt in left umbilical region, movable with respiration; tumour very tender to palpation. Urea-concentration test normal. Cystoscopic examination showed deficient flow from left ureter. X ray report: Dense patchy shadow left kidney; suggests hard growth. No calculus entire urinary tract. Right kidney normal.

Operation.—Lumbar incision. Opening into perirenal tissues a hard encapsuled mass presented. Kidney and descending colon pushed forward. Kidney normal in size and no abnormality found in substance. Incising tumour capsule a fatty mass quickly extruded and was easily removed. The capsule proved exceedingly difficult to remove, and was adherent to lower pole of kidney. Nephropexy was performed and wound closed with drainage. Recovery uneventful, with disappearance of symptoms. Pathological report: Tumour presents naked-eye and microscopical appearances of fibro-lipoma, benign in character.

Fibro-lipoma in this situation is of sufficient rarity to merit attention. The urinary symptoms were probably those of intermittent hydronephrosis.

CASE 2. *Irreducible Hernia with Colonic Band.*—The patient was a man, aged 50, with increasing pain and constipation; bowels moved about once in five days. Dyspeptic attacks. Double inguinal hernia. Examination: Large direct left inguinal hernia, irreducible. Some thickening felt over descending colon with tenderness on deep palpation. X ray report: Some obstruction, not complete in area of ileal and pelvic colon. May have some connexion with hernia.

Operation.—Incision as for radical cure of hernia. Lipoma surrounding cord structures. Cord structures separated and sac identified. Numerous adhesions between intestine and sac. Incision prolonged upwards, and peritoneum incised in line of sac incision. Fibrous band found encircling descending colon and constricting it to small finger opening. This band was about 1 inch thick, and continuous with the lipomatous tissue around the cord. Impossible to remove band around intestine, therefore excision of part involved and end-to-end anastomosis performed. Radical cure of hernia on both sides completed operation. Recovery uneventful.

The association of a lipoma of the cord and fibrous constriction of the bowel is not usual. The X ray report in this case was invaluable, otherwise the constricting band could easily have been missed with consequent non-amelioration of symptoms.

I have to thank Dr. A. H. Marsh of the Jewish Hospital for his accurate and helpful X ray work, Dr. Arthur Davies for his pathological reports, and my anæsthetist, Dr. V. R. Hirsch, for his assistance.

London, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF SURGERY, ANÆSTHETICS, MEDICINE, OBSTETRICS AND GYNÆCOLOGY, AND PATHOLOGY.

A MEETING of the combined Sections was held on Feb. 4th, Mr. HERBERT J. PATERSON, President of the Section of Surgery, being in the chair, when a discussion took place on the Prevention and Treatment of

POST-OPERATIVE PULMONARY AFFECTIONS.

Mr. E. C. LINDSAY (Section of Surgery) opened the discussion, and his paper appears in full in another part of this issue.

Dr. FRANCIS E. SHIPWAY (Section of Anæsthetics) said the two outstanding features of the two chief post-operative complications (bronchitis and pneumonia) were, first, their more frequent occurrence after abdominal (especially upper abdominal) operations than after operations elsewhere; secondly, their comparative rarity in private practice. Recognition of these facts would, he said, help to elucidate the problem of their ætiology, and therefore assist in their prevention. Bronchitis after operation might cause bursting of the wound, thus necessitating immediate operation, with its risk of sepsis, of aggravating the bronchial affection, and the formation of adhesions. Sometimes bronchitis arose, in mild degree, in a healthy patient after ether anæsthesia. It was caused partly by exposure, but was chiefly the result of loss of body heat.

Ether Impurities.

In some methylated ethers there were impurities, such as peroxides and aldehydes, which were increased on exposure of the ether to sunlight. Profound and prolonged ether anæsthesia was definitely harmful, particularly to certain types of patients, and, wherever possible, the concentration of the vapour should be materially diminished and relaxation obtained by the substitution of chloroform, or the employment of a local anæsthetic. Often spinal anæsthesia was very valuable for patients who were to be operated upon below the umbilicus. Dr. Shipway urged that the wonderfully good results obtained during the war from a combination of gas-oxygen and novocaine should not be forgotten. Excepting in hot weather, ether should be given warm. He considered that the ordinary hospital ward was too draughty, and could not be maintained at the optimum temperature for each patient.

Intratracheal Insufflation of Ether.

The speaker said he had used ether intratracheally in nearly 500 cases of facial, nasal, buccal, and pharyngeal operations, many of the patients having been of advanced years, and some of them chronic bronchitics, yet bronchitis seldom occurred after the operation on these, and pneumonia never. Hillman was favourably impressed by splanchnic analgesia, especially in cases for whom general anæsthesia was unsuitable. Expansion of the bases of the lungs by coughing or by breathing exercises was recommended.

Lord DAWSON favourably contrasted the giving of anæsthetics nowadays with that of former times, and said that, in his opinion, the anæsthetist was seldom or never responsible for post-operative complications, an exception being made, perhaps, in the case of the aged bronchitic, in whom only a slight irritant was necessary to determine an attack. Embolism was the most difficult and interesting of the complications, and Mr. Lindsay's figures were of high value. When a large clot became arrested at the bifurcation of the pulmonary artery, or at one of the larger branches, it might cause death instantly, or within a few minutes. When the clot was in a smaller artery the area of infarction was usually limited by a patch of pleurisy, but many physical signs might be absent, and the diagnosis might have to be made on only vague evidences. He considered that small emboli were responsible for the attacks of slight pain and transient, irritable cough on the second or third, even to the eighth, day after operation. The larger the infarct, the greater was the danger of infection. Morphia was valuable not only in soothing the pain, but in rendering movement of the corresponding lung and chest possible. In his opinion the most common infecting organism was the pneumococcus, type 4, and that explained why so many of these cases recovered. Lord Dawson went on to discuss the *modus operandi* of emboli.

The Origin of Emboli.

Lord Dawson considered that thrombi form within the auricles of degenerated hearts, which had been enfeebled by operation or other cause; but he agreed that the majority of emboli in the lung originated in the systemic veins, the femoral and iliac being favourite vessels, mostly those on the left side. The accidents under discussion were those prone to occur in the second half of life, when the circulation was sluggish and the vessel walls deteriorated. Though trauma was so very common during the war, embolism of the lung was relatively infrequent, the subjects of these traumata being young and vigorous. Before thrombosis could occur he thought some activating agent in addition to sepsis must be operative. People with low blood pressure were specially apt to get thrombosis. The speaker thought the pneumonia in these cases was nearly always of the lobular type, and instances of this following operation were so few that they could not be regarded as anything more than accidents. The milder forms were probably unrecognised. Pneumonia might be the first indication that embolism had occurred. It was not always that the sputum was blood-stained following infarction.

With regard to infection, there should be a careful routine examination of the upper air passages before these abdominal operations. The influence of a common cold was well known. Following massive collapse there might be immobilisation of the diaphragm and interference with movement in the lower intercostal spaces, and this led to stagnation of the lung and impairment of the circulation of both air and blood, resulting sometimes in a blocking of the afferent bronchi and so also collapse. Massive collapse was usually recovered from, the symptoms disappearing long before the signs. It was a manifestation of exhaustion. Broncho-pneumonia could be much reduced by avoiding operation in non-urgent cases at times when influenza and lung troubles were rife, and by getting the upper air passages clean before the abdominal operation was undertaken.

The Obstetrical View.

Mr. J. PRESCOTT HEDLEY said that gynæcological operations had the unenviable reputation of being more commonly followed by fatal pulmonary embolism than any other kind of operations; but the records at St. Thomas's Hospital did not support this view. Wilson's figures at the Mayo Clinic gave ten fatal cases in 7993 gynæcological operations, or 0·12 per cent. In the same period 23 fatalities occurred in 12,229 operations on the gall-bladder, liver, prostate, colon, rectum, and for hernia—i.e., 0·18 per cent. In some cases, in which the pulmonary disturbance started with signs of bronchitis 12 to 36 hours after operation, the anæsthetic seemed to be the cause. If the patient had a common cold at the time of the operation the danger of complication seemed to be increased; possibly the anæsthetic stirred into activity a mild or latent infection. Emphysematous patients also were liable to these sequelæ. Not infrequently they occurred after local anæsthesia; in some, mere examination under anæsthesia provoked them. Yet they were remarkably rare in accidental wounds and

fractures. The temperature of the operating theatre should not be below 70° F., and the patient should be protected from cold and draughts after the operation. Since the provision of tents over the conveying trolley, and curtains round the bed, there had been fewer cases of bronchitis following operation. Efforts should be made to prevent inhalation of vomit, mucus, or blood during the semi-conscious stage; there should also be careful handling of tissues. A patient whose circulation had become depleted by prolonged bleeding before operation, or by excessive bleeding at the operation, or who had been starved or purged, thereby had his liability to thrombosis increased.

Sir CHARLES GORDON-WATSON also referred to the danger of pulmonary complications after operations on the upper abdomen. During the war he saw many cases of severe abdominal wounds—especially wounds involving both abdomen and thorax—in which there was collapse, or inhibition, or paresis of the diaphragm. Dr. Pasteur's explanation was that an abdominal condition which was severe enough to cause reflex rigidity of abdominal muscles produced a relaxation of the diaphragm. In these cases, too, collapse of the base of the lung, especially the right, was very common, with blocking of bronchioles, stasis, and perhaps lobar pneumonia.

Prevention.

If severe operations on the abdomen could give 10·8 per cent. of pneumonia, prevention became a very important matter. There must be many accessory factors, of which irritation caused by the anæsthetic must be one, but Dr. H. W. Featherstone seemed able to show that it was not the important one. During the war Geoffrey Marshall's plan of warming the ether was followed by immediate good results. More recently the intratracheal method had further reduced the incidence of complications. Despite improvements in surgical technique, pulmonary embolism after operation was still a bugbear. At St. Bartholomew's Hospital three years before the war the surgical deaths from pulmonary embolism were 0·5 per cent.; for three years after the war they were 1·7 per cent.; and in the next two years the percentage rose to 2·9.

Causation.

Sir Charles Gordon-Watson considered that trauma and stasis were the two most important causative factors, but that there must be another to complete the process, possibly the absorption of thrombokinase, as had been suggested by Mr. Lockhart-Mummy. Factors in the production of the sluggish circulation which he discussed were: (1) purging, bleeding, sweating, and the withholding of adequate fluid after the operation; (2) lowering of blood pressure by trauma and the shock of prolonged operation, aided by morphia and continued immobility; (3) constrained posture during operation. He did not favour venesection, as he thought the patient could not spare the blood so withdrawn.

Dr. H. W. FEATHERSTONE said that if, as many believed, ether was an important factor in the production of the sequelæ under discussion, they should be more frequent after severe operations on the head and neck than they were. It had been found that ether, given by the intratracheal method, was particularly safe. He attributed great importance to the presence of an epidemic, such as of influenza, or ordinary colds in the causation of post-operative pulmonary conditions, and urged, therefore, that non-urgent abdominal operations should be deferred to times of comparative health among the main population.

Dr. ROBERT HUTCHISON remarked that more progress would be made in this matter if the cause of these complications was known. He considered that thrombosis which resulted in embolism was largely the result of the postural conditions required by the operation. The patient was placed into the position of a double-inclined plane, so that his body was really kinked, and the return of venous blood thereby interfered with. This was aggravated by the fact that the operation, for the time being, practically paralysed abdominal respiration. He urged that the importance of chill after operation should not be overlooked; it was too much the custom to put insufficient clothing on to the chest after an operation, and to subject the enfeebled patient to direct draught from an open window.

Dr. W. J. MCCARDIE (Birmingham) agreed with Dr. Shipway and Dr. Featherstone in regard to the small part played by anæsthetics in these complications. He also contrasted the conditions surrounding private and hospital patients, to the great advantage of the former, especially in the matter of preliminary preparation and after-care. He advocated the establishment of recovery wards, specially staffed for cases which had undergone severe operations, on the plan adopted in Vienna. The responsibility in regard to the occurrence, prevention, and treatment of these complications rested, he considered, with the surgeon, not with the anæsthetist.

Dr. F. W. LONGHURST, also speaking as an anæsthetist, gave the result of his investigation of 700 consecutive operations at St. George's Hospital, and criticised the lack of efficient after-care of operation cases in hospitals. He considered various methods of anæsthetisation, and condemned ether by the open method because of the great amount of evaporation. Only ten cases of complication out of the 700 operations inquired into could be in any way attributed to the anæsthetic.

Dr. Z. MENNELL said he did not think the anæsthetist could be blamed in any way for the occurrence of pulmonary embolism, though perhaps some of the inflammatory effects following chest operations could be laid at his door. Ether he considered to have a more irritating effect than chloroform. A preliminary cold or infection predisposed to pneumonia after operation. It was found at St. Thomas's Hospital that a mixture of atropine, adrenalin, and strychnine definitely aided recovery from bronchitis or pneumonia.

Dr. C. F. HADFIELD referred regretfully to the too prevalent habit of making the anæsthetist the scapegoat when trouble occurred. Ether, he said, was not harmful to the healthy lung, and it would not harm patients if their alveolar secretion were reduced. It was the peroxides and aldehydes in some makes of ether which did the damage.

Sir CHARLTON BRISCOE said his own surprise was that so few patients had post-anæsthetic complications. He discussed the various unnatural conditions which were imposed by the operation on the patients, and showed how these favoured infection of the lower lobes of the lungs. An important pre-operation step was to see that the mouth was sound and clean.

Dr. G. H. BURFORD referred to the occurrence of glycosuria at the same time as these patients showed respiratory distress. The glycosuria usually cleared up some days before normality returned to the lungs.

Mr. J. E. ADAMS expressed his agreement with the points which Dr. Hutchison had put forward, and his approval of placing curtains round the beds of severe cases especially in the winter. He thought some of the patients were over-nursed, and especially too frequently washed.

Mr. LINDSAY briefly replied.

SECTIONS OF EPIDEMIOLOGY, COMPARATIVE MEDICINE, AND DISEASES OF CHILDREN.

A COMBINED meeting of these Sections was held on Feb. 9th, Prof. F. T. G. HOBDAY, President of the Section of Comparative Medicine, being in the chair. A discussion on the

CONTROL OF TUBERCULOSIS AND THE MILK-SUPPLY

was opened by Dr. J. ROBERTSON, who expressed the opinion that such a discussion was most opportune, particularly in view of the not inconsiderable difference of scientific and medical opinion as to the part played by bovine tuberculosis in the production of human

mortality and morbidity. On the one hand was the statement that 3000 children succumbed annually to a tuberculous infection of bovine origin, while tens of thousands suffered from other forms of bovine tuberculosis resulting in crippling and chronic ill-health; on the other hand, many experienced physicians stated that moderate invasion by bovine bacilli provided just that amount of immunity necessary to save the individual from infection with human tuberculosis, and that a few living bacilli in milk was a good thing for the preservation of the race. Dr. Robertson pointed out the close clinical and pathological parallel between the lesions and progress of the disease in cattle and man, and said that the same predisposing causes might undoubtedly be cited in both cases—viz., hereditary predisposition, bad housing, absence of light and air, poor food, exhausting conditions of life, &c. In his opinion the evidence available as to the amount of tuberculosis due to unhealthy milk-supply was sufficient to warrant public expenditure on the attempt to reduce the infectivity of milk. The three methods in use in Birmingham were the testing of milk samples taken in the city and the tracing and elimination of cows found to be yielding infected milk; the offer to farmers of free testing of their herds, provided they undertook to remove animals giving positive reactions; and the process of pasteurisation. During the last 18 years the percentage of churns sent into the city containing live tubercle bacilli had averaged 8·7, but the figure was decreasing. Microscopic examination alone was never relied on, the guinea-pig inoculation test being used; this resulted in a delay of two months, during which time the infected milk continued to enter the town. A small compensation for immediate slaughter had been paid by the city for many years before the Tuberculosis Order of the Board of Agriculture had come into force, and Dr. Robertson was certain that good had been done by the elimination of many wasting cows and in the education of the farmers, but the method as a whole was far too slow, and was expensive both in the time of the veterinary officer and in respect of travelling and laboratory expenses.

Bang's Method—Pasteurisation.

In 1906, as the result of a visit to Denmark, the isolation and testing methods of Prof. S. Bang had been introduced, and all cows were tested free twice in each year, and new additions to the herds at any time required. By this method a herd might be freed of tuberculosis in five years without any very serious expense to the farmer. The farmers had been willing to coöperate, as they anticipated from the periodic advice of the veterinary officers a reduction not only in the number of "wasters," but also in other cattle diseases and contagious abortion; 38 herds had by these means been freed, or nearly freed, by 1914, but the war had spoiled the best herds, and at the present time only 30 had been restored to pre-war level. In Dr. Robertson's experience the tuberculin tests gave as good results as any known form of test, when used by careful veterinary officers on ordinary dairy cattle housed quietly. On an average, 30 per cent. of the animals tested gave positive reactions.

In 1921 a visit to America to examine the results of pasteurisation in that country had convinced him of the value of this method if properly carried out, and at the present time from 60 to 70 per cent. of the milk retailed in Birmingham had been heated sufficiently to kill tubercle bacilli, and he hoped that soon no raw milk would be sold except from tested herds. Even then he would advocate the heating of milk for nursery use on account of the danger of contamination with scarlet fever, sore-throat, or other infection. In conclusion, he stated that he was in favour of the freeing of dairy herds from tuberculosis, but in view of the slowness and difficulties of this method and the need of many more veterinary officers, of much greater expenditure on cowsheds, and of prolonged education of agriculturists, he recommended adequate pasteurisation and bottling of all milk.

Lieut.-Colonel J. W. BRITTLEBANK pointed out that this battle must be waged, and its cost must fall in the domain of the agriculturist. Of the seven and a half million head of stock in Great Britain some three million were in milk, and of these at least one million were infected with tuberculosis, though in many cases so slightly that it did not affect their well-being, and indeed the encapsuled lesions were perhaps a protection to them. In Manchester 10 per cent. of the milk samples taken in the city showed living tubercle bacilli, and, unlike Birmingham, the proportion had increased since 1901. Nevertheless, farm inspection had revealed tuberculosis of the udder in 597 cows during that period, and these were mostly animals producing plenty of milk and in the middle of their active period, so that some good must have been done by the elimination of that amount of infection. But the piecemeal measures so far adopted had done nothing to reduce the incidence of bovine tuberculosis; they could be but preliminary to the introduction of future adequate legislation. Their danger lay in the lulling of some portion of the health service into a false security. Dairy farmers as a class were unable to appreciate the value of preventive medicine and were liable to regard any progressive measure with suspicion, and it was hard to convince them of their error so long as it remained a fact that the public would buy the cheapest milk on the market; and the more so in that the earliest animals to react to tuberculin were those producing the greatest quantity of milk, which were of the greatest value for breeding. The isolation measures proposed by Bang were not feasible on a wholesale scale except in specially selected herds, and freedom from disease could only be secured where there was indefatigable industry, ceaseless vigilance, ample accommodation, and plenty of money. Colonel Brittlebank described the breeding of a model herd before the war; it had been found that the introduction of animals from outside, even though they were tested on entry, had resulted in infection; the herd had therefore been made self-contained, and of the 257 calves reared not one showed any tuberculosis, and the average output per cow per annum had been raised by some two or three hundred gallons. The pneumonia incidence was considerably lowered, and there was no contagious abortion. After 1915 no veterinary advice had been obtainable, and although the farmer had attempted to carry on the testing himself an infected cow entered the herd and by 1916 37·5 per cent. reacted positively to tuberculin, demonstrating the remarkably rapid spread in unprotected animals. At the present time Manchester relied on clinical examination of herds and testing of mixed samples. Colonel Brittlebank gave some interesting figures illustrating the conditions in farms visited by him in 1909. Of 136 farms seen, 6 were clean and 52 fairly clean, the others being frankly dirty, even judged on a moderate cowshed standard, and in summer. Five only had any sort of provision for manure storage. Of 346 sheds inspected, only 10 were clean, and in 78 the lighting, in 88 the ventilation, was satisfactory. Eleven cows out of 3019 had tuberculous udders. Watching the local markets, Colonel Brittlebank noted that wasters were being sold in large numbers for sums ranging from 10*s.* to 35*s.*, and of the 17 cows he saw sold in one market 14 had advanced tuberculosis, in nine cases of the udder. He had revisited these farms in 1925, and found that they were all in precisely the same condition as at his previous visit. He felt that there was little hope of being able to proceed to the wholesale elimination of bovine tuberculosis so long as such conditions remained; there was a colossal task before us in this respect, though the work was well worth doing and would result in most valuable results both to public health and to agriculture. He recommended that the Tuberculosis Order should be so amended as to require the inspection of every dairy farm in the country without waiting for the notification of obvious tuberculosis; that compensation should not be offered for decrepit and emaciated animals, but that rather it should be a disgrace for such a beast to be kept on

any farm; that meanwhile pasteurisation should be extensively practised, although it had certain disadvantages and was not a panacea, and however good the pasteurisation plant might be it was still essential that all dairy herds should be examined and that the sources of supply should be only such as would give a reasonably clean milk.

Prof. S. L. CUMMINS emphasised the paramount importance of the very difficult question as to the danger or possible value of living tubercle bacilli in milk, and urged the necessity of consolidation of opinion between medical men and veterinary officers with a view to formulating a definite policy to lay before the public. He had been much impressed by Colonel Brittlebank's example of the dangerous position of a tuberculous-free herd unless the extraordinary protective measures could be maintained indefinitely, and pointed out that in places, such as large tracts of Africa and India, where bovine tuberculosis did not occur, the human form, if it appeared, was of a far more virulent type than elsewhere.

The Quantitative Element.

He urged a consideration of the quantitative element in the problem, it being undoubtedly true that the presence of bacilli in sufficient dilution produced no clinical infection. In the production of an adequate dilution the process of pasteurisation was undoubtedly important, however much it might be impugned theoretically as leaving a certain number of bacilli alive in some cases; also of importance was the mixing of milk in cities. A far more intense danger of infection arose in country districts where a child might be fed on milk from one or a few cows on the home farm only. Another point in this connexion was the lack of consistency between the attitudes towards human and bovine milk. Doctors advised mothers to feed their babies provided there was no active clinical tuberculosis, in spite of the fact that something like 80 per cent. of human beings gave a positive tuberculin reaction. The cow was submitted to a far higher standard, but of course the cow was living in an extremely artificial state, and it was possible that that influenced the infectivity of the milk; perhaps also the handling of the udder might tend to activate lesions otherwise quiescent. Prof. Cummins maintained that the death of a guinea-pig as a result of inoculation of the centrifugalised deposit of a large quantity of milk could not necessarily mean that a diet of that milk would be fatal to a child. As a poor country we could not at present attempt the complete extirpation of tuberculosis in cattle; we must deal with the practical problem of elimination of dangerous infection first.

Dr. J. NIVEN described the methods employed in Manchester since his appointment in 1894—viz., the distribution in three successive years of handbills advising the boiling of all milk, a record of the conditions in all farms supplying milk to the city and immediate suppression of unsuitable sources of supply, instruction of health visitors and school-girls in the preparation and keeping of milk for infants, the appointment of a veterinary inspecting officer, testing of samples of mixed milk, visitation of farmers, and education of agriculturists and consumers. He then referred to Dr. Robertson's report on the milk control in America, the success of which he attributed to the extensive powers of local authorities independent of the central governments. Any small town could exclude from its shops the milk of a dirty dairy, all retailers had to have a permit, which would be rescinded if they were found selling adulterated milk; this term included milk from any cows fed on distillery waste or unwholesome food and from cows living in crowded or unhealthy conditions. The inspectors had power to seize, test, and destroy the milk of any retailer at any time without compensation. Dr. Niven urged the insistence on sterilised milking pails of good pattern, of the clipping, washing, and drying of the udders, of not leaning against the cow whilst milking, of special milking sheds, shavings rather than straw for bedding, dusting of floors with powdered quicklime, and proper washing of the bodies of the animals. He considered that the leeway in this matter in our country could be made up if the recommendations of the Astor Committee were followed, though a difficulty here was the inadequate supply of ice. He did not consider that we were ready for a system of compulsory grading at present. He considered that all local authorities should have power to carry out adequate inspection of the sources of supply, combined with instruction by the veterinary inspector.

The discussion was adjourned until March 2nd.

SECTION OF OTOLOGY.

A MEETING of this Section was held on Feb. 7th, Dr. KERR LOVE, the President, being in the chair.

Mr. G. J. JENKINS read a paper on

Septicæmia and Acute Middle-ear Infections.

He said that in his experience the septicæmic state was more common in middle-ear infection than in any single intracranial complication. There was a danger that middle-ear infection in early septicæmia might not be recognised. The septicæmic state was much more likely to be met with in children than in adults, and perhaps mostly in those who had not previously had a gross lesion of the ear. When the incidence of the septicæmia occurred in the early stages of infection of the middle-ear tract there might be no obvious local inflammatory signs. If the septicæmia came on at a later stage of inflammation the appearances presented were those of chronic suppurative middle-ear disease. In some cases the septicæmic state so masked the local signs that even the skilled otologist might find it difficult to recognise the serious local lesion, so that it was not surprising that it was sometimes missed in general practice. A sudden cessation of pain and discharge, with an obvious alteration in the patient's general condition, should send the doctor to a careful examination of the ears. A "laking" of pus in the big cells, a thin, pale mucous membrane, and absence of congestion were characteristics of the mastoiditis preceding the septicæmic state. Mr. Jenkins stressed the importance of thoroughly dealing with the middle-ear condition, a Schwartze operation and paracentesis being generally needed. With regard to the treatment of the general infection, until recently it had been his custom to give these patients large doses of normal horse serum as soon as that was possible, continuing this as long as needed; but recently he had employed immuno-transfusion, and, so far, he was favourably impressed by it. He had not been successful with vaccine-therapy in these cases. Severe cases were of much more rapid development than the milder ones, and treatment appeared to have on them little or no effect.

In the discussion which followed, Mr. SYDNEY SCOTT, Dr. W. T. GARDINER, Dr. NEIL MACLAY, Mr. A. R. TWEEDIE, and Dr. W. S. SYME took part.

Anastomosis of Facial Nerve in Facial Palsy.

Mr. LIONEL COLLEDGE and Dr. L. D. BAILEY gave a kinematograph demonstration of results of three operations for anastomosing the facial nerve after the occurrence of facial palsy. The actual behaviour of the various facial muscles on stimulation at various stages were well depicted by this means, and the question was discussed by Sir CHARLES BALLANCE, Dr. SYME, Mr. SYDNEY SCOTT, Mr. JENKINS, and Dr. A. A. GRAY.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, S.E., to-day, Friday, Feb. 13th, at 8.45 P.M., the President, Dr. H. S. Knight, in the chair, when Dr. Harold Pritchard will read a paper on Some Modern Aspects of Disease.

MEDICAL SOCIETY OF LONDON.

THE TREATMENT OF LYMPHADENOMA.

AT a meeting of this Society on Feb. 9th, with Dr. E. M. CALLENDER, the President, in the chair, a discussion took place on the treatment of lymphadenoma.

Sir THOMAS HORDER, in opening, said that his request to report to the Society two cases of the Pel-Epstein or relapsing pyrexial type of lymphadenoma, in which a certain treatment was followed by much better results than had hitherto been recorded, was met by a suggestion that he should open a discussion on the general subject of the treatment of the disease, and to this he readily agreed. He first described the two cases, both of them men between 40 and 50 years of age, in which there was a periodical rise of temperature of such a nature that, in one case at any rate, it was regarded initially as influenza. In the first case he gave the history in detail and showed the temperature charts. In June, 1922, other treatment having produced no results so far as the pyrexial condition was concerned, he decided on an intensive course of arsenical treatment by intravenous injection, coupled with X rays applied to the liver area, the first application of X rays being made a few days after the completion of the arsenical injections. This treatment upset the rhythm, hitherto constant, of these recurring attacks, but improvement was not maintained, and in October he (with Dr. Knox on the radio-therapeutic side) determined to proceed a second time with neokharsivan and X rays, but with closer synchronism than was observed in the first instance. An attack which was ordinarily due in November was aborted, and although there was an isolated attack in January, 1923, there had been no other recurrence up to the time the patient was last heard of (midsummer, 1924). The treatment had been continued until the end of March, 1923, the X ray applications being given every second day during the course of arsenical injections. In the second case, the patient, who was very ill indeed, was subjected to the same treatment, with the same result. As to which of the two agents employed—neokharsivan given intensively and intravenously and the X rays—was of the more value therapeutically, his own impression was in favour of the X rays, but it might be that the combination was desirable even if not essential. It was also his experience that to synchronise rather than to separate these two measures was the more effective procedure. In the arsenical dosage one must be a little courageous, but he could lay down no hard and fast lines; the individual case must be the guide. In the first of his cases he had no proof, either from what was seen at a laparotomy or from physical signs, that the liver was badly hit, the patient was never jaundiced, and was well between the periodical attacks, so that although he thought the lymphoid tissue of the liver was the avenue of infection, he was prepared to "bank" on a good deal of hepatic sufficiency and to give the neokharsivan in fairly liberal doses. So far as the dosage of X rays was concerned, he would leave that to Dr. Knox. He had had no experience of radium in this type of case, but radium had been used in cases of localised glandular or nodal lymphadenoma which had come under his observation. One case in particular was that of a boy, 7 or 8 years of age, who had abdominal lymphadenoma, with recurring ascites and large masses of glands. This boy took arsenic by the mouth very badly, and was treated at the Radium Institute with very striking results. He had also had some recent experience of one of those very interesting but rare cases of lymphadenomatous disease of the spinal cord. Here an attempt was made to synchronise the intravenous injection of arsenic with radio-active measures; with X rays very little result was forthcoming, but with radium the improvement was surprising, and the patient, who had not previously been able to walk at all, was now able to get about with a stick. With regard to other treatments, he wondered whether anyone had tried any other drug than arsenic—antimony or bismuth, for instance—or any other route than the intravenous. Had anyone succeeded with protein shock in altering the course of one of these more generalised types of lymphadenoma? Surgery was of recognised value, but must necessarily be limited to those cases in which groups of glands were enlarged with as yet no sign of the general lymphatic tissue being involved. Cases with which he had been faced several times lately presented a special problem—cases which, although the glands had been got rid of, and the liver and spleen showed no signs of disease, were cachectic and showed progressive loss of weight and strength, with an obviously bad blood picture. These cases appeared to be more common than formerly; probably the truth was that, the early stages being more amenable to treatment, medical men were made aware of them more frequently. He did not think that arsenic would be of any use in such cases, and X ray treatment was probably contra-indicated. The thing to do would be to put these patients out into the sun and to try to enable them to recover their general resistance.

Dr. ROBERT KNOX said that in response to radiation treatment lymphadenoma gave sometimes an extraordinary result—a rapid disappearance under appropriate dosage, a period of usual health, extending sometimes to many years, followed by recurrences, in some cases amenable to further treatment, but in the end in all cases defying it. Next to the simple inflammatory tumour, lymphadenoma gave the best response to radiation treatment. The treatment must be systematic, and there were differences of opinion with regard to the particular type of radiation which should be employed. X rays gave a marked response in glandular and mediastinal conditions, while for the manifestation of the disease in the deeper regions, and particularly in relation to bones, radium appeared to give rather better results. The dosage with either agent need not be excessive, preferably small doses at short intervals of time, extended over a long period. In cases which had responded favourably and apparently had cleared up the treatment had been stopped; this in his opinion was a mistake. Having established a degree of control over the morbid condition it should be their object to maintain that influence by giving at regular intervals a moderate dose. The nature of the control exercised by radiations was somewhat difficult to understand; in all probability the influence was exercised through the blood-stream, and in treatment by radiation certain biological processes were modified and directed towards a more normal course. He favoured the use of combined treatments. In the acute cases rest in bed, fresh air, sunlight and its artificial equivalents, arsenical preparations, were all useful. The employment of X rays and radium to the internal organs of the body might be regarded as an extension of surface light treatment, and the action might be the same in both. No case should be treated by the radiologist before he had discussed it fully with the clinician. The day had gone by when one could say, "Here is a case of lymphadenoma, let us treat it with X rays." All factors must be considered, and a definite scheme of dosage evolved. It was useless to pretend that it was exactly known what happened when combined measures were used, but he felt convinced that in the present method of attack they were proceeding in harmony with the fundamental principles of radiation therapy, and that such work as had been referred to by Sir Thomas Horder would lead a long way on the road to a complete understanding of what actually took place when radiations were used. That a degree of control could be exercised in a number of diseases there was no doubt. If in the end they were enabled to understand the rationale of radiation therapy it might only be a short further step to appreciate the disordered functioning of the living cell which constituted disease as at present understood.

Dr. PARKES WEBER said that he took it that lymphadenoma was what was mostly called Hodgkin's disease in England. This disease had a definite pathological anatomy. One of the essential points was the presence of the so-called Hodgkin's disease giant cells. The general opinion in America, Germany, Austria, and, he thought, also in England, was that in all probability Hodgkin's disease, as it was called here, was not a variety of tuberculosis, but a disease of unknown origin—that is, unless some suggestions put forward in America as to a specific bacillus turned out after all to be correct. He believed that precise diagnosis was essential. The enlargement of cervical or axillary lymph glands might be more or less imitated, not only by tuberculosis and syphilis, but also by various tumours. A chronic swelling on one side of the neck in a young woman, which he had at first thought was of the nature of Hodgkin's disease, turned out, on exploratory biopsy, to have the structure of adenocarcinoma. He did not understand that any biopsy was made in the two cases brought forward by Sir Thomas Horder. He found it difficult to accept both cases as true examples of the condition stated, although they were none the less valuable because of the wonderful results of the treatment, which, after all, from the patient's point of view, was the great thing, and they would give a great stimulus in the treatment of cases which resembled this Pel-Epstein type of fever. He also wished to ask the X ray specialists whether, in treating cases which were apparently those of Hodgkin's disease, they did not think that sometimes their treatment did harm—that although they brought about a rapid diminution of a group of glands on one side of the neck, they set up other disturbances. For his own part he had a suspicion that X ray treatment did sometimes hasten death in these cases.

Dr. A. SALISBURY MACNALTY said that his own experience of the treatment of lymphadenoma had been restricted chiefly to cases of the disease with relapsing pyrexia. The most beneficial results had been obtained with arsenic. As Dreschfeld found, this drug not only benefited the general health of the patient, but in two of his (the speaker's) cases it caused a diminution in size of the enlarged lymphatic glands and abolished the pyrexia. He proceeded to describe the two cases, but added that, unfortunately, both of them had been lost sight of and could not be traced. Treatment by salvarsan or its substitutes had proved disappointing in several instances. In cases of chronic lymphadenoma application of the X rays or of radium might cause the affected external glands to diminish, but, in his experience, neither treatment had a permanent beneficial effect on the form with relapsing pyrexia. One patient in his series first came under observation as a case of chronic lymphadenoma. Under X rays the enlarged external glands entirely disappeared. Soon afterwards he developed lymphadenoma with relapsing pyrexia and enlargement of the internal lymphatic glands. A troublesome dermatitis not infrequently ensued in cases exposed to X rays and compelled the discontinuance of the treatment. Operative treatment was indicated only as a palliative measure to relieve pressure by the enlarged glands on the trachea. In a case reported by Dr. Batty Shaw a certain number of lymphadenomatous glands in the neck were removed. Surgical treatment proved no safeguard to the onset of the acute form of the disease.

Dr. DOUGLAS WEBSTER referred to the great importance of diagnosis. He had had about 40 cases of this condition within the last few years, and several of them had later turned out to be tuberculous. Tubercle followed lymphadenoma like a shadow. Undoubtedly several of the patients he was at present treating had both lymphadenoma and tubercle. He fully subscribed to the view emphasised by Dr. Knox with regard to the need for collaboration between the radiologist and physician. One interesting point was as to whether X rays or radium had the better effect. In this connexion he related the case of a patient who was treated on one side of the neck with X rays and on the other side with radium. Radium proved to have the quicker effect, but the side treated by radium recurred sooner.

Mr. WARREN LOW remarked that, some years ago, he operated on glands which were regarded as lymphadenomatous, but which the pathologist afterwards demonstrated to be both lymphadenomatous and tuberculous. Until then he had not realised that the two things might coexist.

Sir THOMAS HORDER, replying to Dr. Parkes Weber, said he was a little surprised that there should be any doubt as to the nature of his two cases. He was not dealing with Hodgkin's disease. Hodgkin could not in the nature of things have suspected what was the matter with his two cases. Nor could he have made such an apotheosis of biopsy as Dr. Parkes Weber, because biopsy was then unknown. Dr. Parkes Weber left out of account the observation that when these cases died—as they always did until these particular patients put up some resistance—the liver was found to be almost indistinguishable from the liver in a fatal case of Hodgkin's disease. He felt that he had been justified in bringing before the Society two cases of lymphadenoma of a particular type, seeing that the results of treatment in these cases must certainly be of value, as they threw light on the treatment of the common type of Hodgkin's disease which was so much more frequent and so much more likely to come under the observation both of the physician and of the radiologist. His own feeling was that the key to the treatment of the common case might often be found in the treatment of the uncommon.

GLASGOW ROYAL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Jan. 26th, Mr. JOHN PATRICK, the Vice-President, being in the chair, when a discussion took place on

TETANY.

Prof. LEONARD FINDLAY, in introducing the discussion, recalled briefly some of the outstanding events in the history of the disease. Although convulsions during the dentition period had been known to Hippocrates and Galen, it was only at the beginning of last century that tetany was first appreciated as a distinct entity, when Clarke, in 1815, devoted a chapter of his book "Commentaries on Some of the Most Important Diseases of Children" to "a peculiar species of convulsion in infant children." In 1860 Trousseau once more described the three signs of carpopedal spasm, laryngismus stridulus, and convulsions as manifestations of one disease. In 1874 Erb described the increased electrical excitability, and in 1876 Chvostek noted the increased mechanical excitability of the peripheral nerves, both of which phenomena were of great value in detecting the latent stage of the disease. Prof. Findlay then referred to the various hypotheses as to the pathogenesis of the disease and to the relationship of idiopathic tetany to tetania parathyreopriva and concluded by describing the investigations of Prof. Noël Paton and himself, which had led them to the adoption of the guanidin intoxication hypothesis.

Dr. STANLEY GRAHAM then discussed briefly the main theories regarding the ætiology of tetany as suggested by various workers from a study of the blood chemistry. The four main hypotheses held at present were (1) guanidin intoxication; (2) a disturbance of the ratio of sodium and potassium to calcium and magnesium; (3) calcium deficiency; and (4) alkalosis. With regard to the guanidin intoxication hypothesis he was of the opinion that until more accurate methods for the estimation of guanidin

were devised little further confirmation could be obtained. The action of sodium and potassium as irritative salts and of calcium and magnesium as sedative salts had been known for many years, and it had been suggested by several workers that a relative increase of the irritative or decrease of the sedative salts in the blood would account for the increase in the excitability of muscle. He considered that, though theoretically such disturbance of the ratio could be responsible for an increase in electrical excitability of the muscle, it seemed to play very little part, if any, in the production of tetany as seen clinically. The association of a diminished calcium content in the serum with certain forms of tetany he had found to be by no means constant, and in two recent cases of active tetany the calcium content had been normal. Also in other forms of tetany—gastric and hyperpnœic—the calcium content might be normal. In uræmia with a low calcium content no instance of tetany had been recorded. The disappearance of the signs of tetany on the administration of calcium chloride, supposed to be due to the supply of calcium-ions, was now considered to be due to the acidosis produced. Ammonium chloride had been found to be as effective as the calcium salt, while calcium lactate failed to relieve the tetany. The acidosis of a gastro-enteritis had been found to cause the signs of tetany to disappear. Dr. Graham concluded by discussing the alkalosis hypothesis in its relation to the various types of tetany, and showed that while it was greatly concerned as a factor in all the types of tetany it was unlikely to be the causative factor. A toxic factor in the presence of an alkalosis might account for many of the symptoms, but such hypotheses at present lacked substantial confirmation, and the part played by the phosphorus was also deserving of further investigation.

In the unavoidable absence of Dr. GRACE H. ANDERSON, Prof. FINDLAY read her contribution on the treatment of infantile tetany. Some of the earlier methods of treatment were first described and the reasons for their failure discussed. Dr. Anderson then went on to describe the mode of administration of calcium chloride adopted by her. In the active stage with the three cardinal symptoms present it was best to give the drug in 30 gr. doses every four hours till all symptoms had disappeared. It was found that the urgent symptoms disappeared after one or two doses, but the latent signs took two or three days to vanish. In the latent stage of the disease smaller doses could be given and continued over a longer period. The drug was well tolerated by infants, though the disagreeable taste made the tabloid form preferable in older children. Dr. Anderson concluded by referring to the treatment of tetany by ultra-violet radiation, of which, however, she had no personal experience.

In the discussion which followed, Dr. G. H. CLARK concurred in the view that some form of intoxication was responsible for tetany with probably an alkalosis as an important or even determining factor. He found it difficult, however, to agree with Prof. Findlay in blaming the parathyroid gland for idiopathic tetany and believed the cause to be gastro-intestinal. He thought it unlikely that a disease showing practically the same symptoms in adults and in children should have a parathyroid origin in the latter and not in the former, and no one would suggest that parathyroid disease was the cause of tetany in cases of dilated stomach, cholera, or enteric fever, for example. Diseases of endocrine origin were with a few exceptions uncommon and not readily amenable to treatment, whereas idiopathic tetany was by no means uncommon and was fairly readily treated. Dr. Clark then referred to a case already described by him and considered to be a case of true parathyroid disease which had yielded to the administration of dried parathyroid extract.

Dr. J. ADAM spoke of the experience gained in treating a large number of cases of laryngismus stridulus. He likened this condition to an asthma of the larynx and spoke of the toxæmic factor associated with asthma. He had found also in spasmophilic children an eosinophilia similar to what was found in toxæmia. He referred also to the importance of diet in the treatment, and to the part played by carbohydrate excess.

Dr. GRAHAM and Prof. FINDLAY replied briefly to the various points raised in the discussion.

Clinical Cases.

Dr. JAMES R. RIDDELL described briefly a series of five cases of *malignant disease of the throat and mouth* which had been treated by deep X ray therapy.

1. Epithelioma of the lower jaw and gum—confirmed by pathological report—treated with three doses of X rays by the Erlangen method over a period of five months. No recurrence since healing took place 18 months ago.
2. Tumour of left vocal cord, clinically malignant, treated by two doses—has remained well for 20 months.
3. Ulcerating tumour in region of left vocal cord and anterior commissure involving the subglottic region. Treatment commenced in August, 1924, and has been followed by complete disappearance of the tumour and restoration of function and marked improvement in general health.
4. Alveolar carcinoma of left tonsil and soft palate and gum. Treated by three doses of deep therapy. Showed an apparent cure, but recurrence followed on the hard palate within a fortnight for which radium was used. Patient has remained well for one year.
5. Sarcoma of right maxilla—comfirmed by pathological report—treated by both radium and deep therapy. Patient has been well for six months. Two of the patients were shown to the Society.

Discussion.

In the discussion which followed, Dr. J. L. HOWIE remarked that he had found the results of the Erlangen method somewhat inconstant—some did well and others did not, and was of the opinion that the treatment should be commenced as early as possible. Some of his patients had complained of thirst after the treatment, owing probably to interference with the salivary glands.

Dr. ADAM considered that the results with the Erlangen method would be much improved when the control of the dosage could be more accurately determined. He had had some very good results in sarcoma of the mediastinum. In malignant disease of mucous membrane radium gave excellent results at first but recurrence was common. He had found radium more effective in sarcoma.

Prof. J. H. TEACHER inquired as to the extent of the reaction produced by the method.—Mr. PATRICK referred to the difficulties of operative interference after deep therapy from the presence of a very hard tough slough and from the slowness of healing afterwards.

Dr. RIDDELL replied to the various points raised, and emphasised the importance of regulation of the dosage, with a view to the avoidance of delayed necrosis, which had been noted in some cases as long as 18 months after treatment had ceased.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The sixteenth meeting of the Royal Commission on National Health Insurance was held at the Home Office, Whitehall, on Feb. 5th, Lord Lawrence of Kingsgate in the chair. The main part of the sitting was devoted to the examination of Mr. F. W. Daniels, chairman, and Mr. P. Rockliff, secretary, of the Joint Committee of Approved Societies. The subjects dealt with included the scope and quality of medical benefit, the possibility of limiting cash benefits so as to leave more funds available for treatment benefits, the benefits of married women, the pooling of surpluses. Thereafter, Mr. E. E. England, representing the Stock Exchange Clerks Approved Society and the Baltic and Corn Exchange Society, and Commander E. G. Holdway, representing the Lloyds Health Insurance Society, were examined on a variety of matters relative to these societies. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of Jan. 22nd are now on sale at H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, from which they may be obtained on remittance of cost (2*s.* 3*d.*) and postage.

Reviews and Notices of Books.

ALLEN'S COMMERCIAL ORGANIC ANALYSIS.

Fifth edition. Vols. I. and II. Edited by S. S. SADTLER, S.B., E. C. LATHROP, Ph.D., and C. A. MITCHELL, M.A. London: J. and A. Churchill. 1924. Pp. 796 and 807. 30*s.* for each volume.

DURING the ten years which have elapsed since the fourth edition of this well-known work was published organic analysis has made rapid strides, and this progress is reflected in the volumes under review. Each of the contributors to the different sections is an authority on the subject upon which he writes. The arrangement is the same as in former editions; there is, however, evidence of a closer collaboration between the English and American authors.

From much of the elementary subject-matter contained in the introduction one might assume that the book is mainly suitable for students; but "Allen" has long been recognised as perhaps one of the most valuable English handbooks available for the use of the practising analytical chemist. While many other instruments employed in analytical work are described in detail, no account is given of the microscope. The subjects dealt with in this volume include the alcohols and alcoholic beverages, yeast, alcohol derivatives (ether, chloroform, formaldehyde, chloral, &c.), sugars, starch, paper, and the aliphatic acids, and under these headings will be found many substances of therapeutic value with their methods of preparation briefly described; physical and chemical properties, methods of detection and estimation, together with tests acting as criteria of purity are given in all cases. The methods of analysis described, whether official or otherwise, are given with full details of manipulation. Little fault is to be found with the subject-matter, although it is difficult to understand why various forms of apparatus for the physical testing of paper are included in a volume on organic analysis. Again, the reader who turns to the eight pages on urine analysis will be disappointed to find that these deal only with the detection and estimation of sugars in urine, other constituents being referred to elsewhere under different headings.

The volume falls below the level of its predecessors only in so far as a number of minor blemishes are to be found. Some of the references both in the text and also in the index are incorrectly paged, misspelt words are by no means uncommon, and the page-headings in some cases have no connexion with the subject-matter beneath; whilst many items of more or less importance are missing from the index. A volume of such undoubted merit is worthy of more care in the proof-reading and indexing. The general reliability of the volume maintains the high standard of former issues.

Vol. II. deals with fixed oils, fats, and waxes, and the methods of analysis of butter, fat, lard, linseed oil, higher fatty acids, soap, glycerine, wool-fats, cloth oils, and sterol alcohols. That portion of the work dealing with the general properties and analytical methods is contributed by Mr. C. A. Mitchell, the English editor of this new edition, and it constitutes nearly one-half of this volume. It is a valuable monograph and an unusual amount of care has been taken in its compilation. An interesting section on butter-fat and its analysis is revised by Mr. E. R. Bolton. The use of hardened or semi-hardened fats has complicated indeed the analysis of margarine mixtures, for, as is well known, the process of hydrogenation destroys the identity of the original fat or oil except so far as the saponification value may serve, and if the process be carried to any great extent the liquid vegetable oils begin to assume the properties of the solid fats. One of the American editors, Dr. E. C. Lathrop, writes on soaps and their methods of analysis. This and the following section on glycerol by Dr. T. W. Lawrie are interesting alike to the general reader and the specialist. That somewhat complicated class of bodies known as the sterols are lucidly dealt with by Mr. J. A. Gardiner; the description of and the separation of these bodies from tissues and their chemical examination will be appreciated by physiologists and biochemists.

A perusal of this volume conveys the impression that the work has been more carefully prepared and better edited than Vol. I. Although it is intended primarily for laboratory use, there are many parts of it which will be of the greatest use to those who are concerned with the chemical side of medical science.

AN INTRODUCTION TO DERMATOLOGY.

Eighth edition. By Sir NORMAN WALKER. Edinburgh: W. Green and Son, Ltd. 1925. Pp. 273. 20*s.*

A NEW edition of this work is always awaited with interest by English-speaking dermatologists, for, in spite of his engrossing activities in other fields, Sir Norman Walker contrives not only to keep himself informed of new lines of investigation and treatment in dermatology, but also to test them for himself. His verdicts thus command respect, even if they do not always meet with general agreement. The convenient size of the book—and to convey so much information in less than 300 by no means closely-printed pages is a remarkable achievement, the charm of the writing, the practical "tips," and the many beautiful illustrations, of which 92 are coloured plates, make this volume an admirable introduction to dermatology.

It is worthy of note that Sir Norman Walker, whose experience in the treatment of lupus vulgaris is admittedly very large, states that under no other method of treatment has he seen such rapid and satisfactory improvement as in under treatment by one or other of the "Sunshine" lamps. Even quicker and better results are obtainable with actual heliotherapy in places where the amount of sunshine admits of more or less continuous treatment. The value of heliotherapy or artificial light-baths in infections other than tuberculosis—e.g., chronic staphylococcal and streptococcal infection—is not yet sufficiently appreciated either in this country or abroad. It is curious that Sir Norman Walker still clings to what may be called two dermatological heresies, one that psoriasis is the "extremely dry form of seborrhœa," the other that alopecia areata is due to an external infection and is contagious. As Civatte has insisted in a recent paper, the histological features of psoriasis are pathognomonic, so much so that, in cases in which the clinical diagnosis between the two conditions is uncertain, microscopical examination of a sufficient number of sections will decide it. Moreover, in seborrhœic dermatitis, the "bottle-bacillus" and staphylococci are always found in a state of active growth and multiplication, whereas in uncomplicated psoriasis the "bottle-bacillus" is never found, and the lesions are remarkably amicrobial. Again, seborrhœic dermatitis can always be cured, but we know of no method of curing psoriasis or of preventing its recurrence. With regard to alopecia areata, there is no evidence that will bear analysis in favour of its causation by an external infection or of its contagious nature. The section on xanthoma requires revision. It is stated that the substance that produces the yellow colour in xanthoma lesions is fat, but the substance in question consists not of true fat, but of cholesterol-esters; no mention is made here of the high degree of cholesterinæmia that obtains in this condition.

The original edition of this manual, published in 1899, was based on Sir Norman Walker's lectures to students, and the arrangement of the subject-matter adopted was no doubt a convenient one in accordance

with the knowledge and views of the ætiology of diseases of the skin that obtained at that time. In 1908, however, there appeared Darier's "Précis de Dermatologie," by common consent one of the best short treatises on dermatology that has yet been written in any language, in which for the first time a rational classification of skin diseases was attempted. It is a matter for regret that for the most part other authors of text-books have not followed this example. A purely ætiological classification of diseases of the skin is not possible, for, not only is the actual cause of some of them unknown, but certain eruptions, such as urticaria and eczema, are non-specific reactions, which may be provoked by various agents. But a reasonable arrangement is to group together the various forms of eruption due to one specific cause, e.g., those caused by staphylococci or streptococci, and the diseases produced by infection with the same class of organisms, e.g., the bacillary, protozoal, and higher fungus infections, and to classify eruptions of unknown origin or of multiple causation according to their morphological characteristics, e.g., the erythemata, the erythemato-squamous dermatoses, and so on. This method, it seems to us, alone enables the student to obtain an orderly conception of dermatology, and we venture to suggest that in the next edition of Sir Norman Walker's classical text-book a rearrangement of the subject-matter on these lines should be made.

We have long held the opinion that Sir Norman Walker's book is one of the very best foundations on which a student can base his study of dermatology, and the professed dermatologist will find in it much original thought and shrewd philosophy.

SURGERY.

Surgical Operations. Second edition. By E. W. HEY GROVES, M.D., B.Sc., M.S., F.R.C.S., Professor of Surgery, University of Bristol; Surgeon, Bristol General Hospital. London: Oxford University Press. 1925. Pp. 225. 21*s.*

THIS book is intended as an introduction to operations and to the technical methods by which they are performed. The methods of sterilisation of dressings and the various materials used in operations are described, as well as the usual methods of preparing a patient, and the general organisation of an operation. There follow brief descriptions of several typical amputations, of other operations on the limbs, and on the head and thorax. Much more space is devoted to operations on the abdominal viscera and the genito-urinary systems, and the volume concludes with 36 pages of illustrations of the chief instruments in ordinary use.

The book does not aim at a complete technical description of operative procedures, but merely at giving the onlooker some idea of the aims and methods of the surgeon. It is luxuriously printed and so well illustrated that a nurse or a student can learn enough from its pages to take an intelligent interest in surgical technique unconfused by a mass of detail. It forms an admirable introduction to the larger works to which the student must refer if he wishes really to master the details of operative procedure.

Operative Surgery. Second edition. By J. SHELTON HORSLEY, M.D., F.A.C.S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. London: Henry Kimpton. 1924. Pp. 784. 52*s.* 6*d.*

IN the second edition of this work there are certain changes which constitute an important advance and make Dr. Horsley's manual of operative surgery a most valuable one. An entirely new chapter is included on the principles underlying operations for malignant disease. The author deals briefly with the ætiology of cancer, the natural resistance to it, and its metastases. He gives a thoughtful account of the technical considerations in operations on malignant disease. The scope of the actual surgical procedure is discussed for different types of growths in varying situations, and he gives his opinions on the desirability of the use of such procedures as electro-desiccation and coagulation, and of radium and X rays as prophylactic aids to surgery. The chapter is completed by a short account of the surgical treatment of radium and X ray burns. A considerable number of new operations are described in their appropriate chapters, many of which have not yet found their way into any text-book of operative surgery. In those desperate cases of diffuse septic peritonitis and late intestinal obstruction, in which the patient is overwhelmed by a toxæmia, W. A. Costain has shown that absorption occurs through the thoracic duct. His operation of lymphaticostomy —i.e., of draining the duct in the neck—is described by Horsley, who suggests that it is a procedure worthy of attention in these cases. B. Stookey's method of providing paralysed muscles with a new nerve-supply is fully explained. It consists of anastomosing a free nerve graft—e.g., from a cutaneous nerve—to a motor nerve at one end and to the muscle at the other. Fair results are reported. Two operations for diseases of the heart appear in this edition for the first time; one is the division of the mitral valve as practised by Cutler and Levine. Essentially the technique consists of a thorough exposure of the heart, the passage of a special valvulotome through the walls of the left ventricle, and the division of the cusps. The second cardiac operation is designed for the relief of angina pectoris, and consists of the resection of the superior cervical sympathetic ganglion or its branches, as described by R. C. Coffey and J. Y. Brown. Among other new features are the operations of pulmonary lobectomy by Evarts Graham, chordotomy of C. H. Frazier, and a special method of intestinal resection by H. H. Kerr, which has so impressed Horsley as to cause him to substitute it for his own operation.

It will be remembered that this book does not set out to be a text-book of all operations. Those described are the procedures used and advocated by Horsley, and the book is therefore all the more valuable.

General Surgery. Practical Medicine Series. By ALBERT J. OCHSNER, M.D., F.A.C.S., LL.D., F.R.C.S.I., President of the American College of Surgeons. Chicago: The Year Book Publishers. 1924. Pp. 706.

THIS is a useful review of the surgical literature which appeared during 1924. The book covers the whole field of general surgery, and all important publications have been extracted. The resulting volume will be of value not only to the practitioner but to the active surgeon, particularly in this country, since much of the information is gathered from sources which are inaccessible to him. The book well maintains the admirable standard set up in previous years by its predecessors in this series.

ORTHOPÆDICS.

The Advance of Orthopædic Surgery. By A. H. TUBBY, C.B., C.M.G., F.R.C.S., Consulting Surgeon to the Westminster and Royal National Orthopædic Hospitals. London: H. K. Lewis and Co., Ltd. 1924. Illustrated. Pp. 144. 7*s.* 6*d.*

THE six chapters of which this book is composed have appeared as articles in the *Clinical Journal.* In the introductory chapter some sound advice is given on the ways of taking radiographs and on their interpretation, as well as more general considerations. The other chapters describe Congenital and Growth Deformities, Static and Postural Conditions, Infantile and Spastic Paralysis, dealing with the disabilities and deformities caused by anterior poliomyelitis and Little's disease, Reconstructive, Regenerative, and Recreative Surgery, and Re-education. A surgeon

of Mr. Tubby's eminence and experience cannot fail to have much that is worth hearing to say on these subjects, and he has made good use of the small space at his disposal. The statement, however, that no authoritative treatise on orthopædic surgery has been published in this country since 1912 is hardly correct. The authoritative and comprehensive work of R. Jones and R. W. Lovett was published simultaneously in London and New York in 1923. Sir Robert Jones's share in that fine book was such a large one, that it cannot be ignored, as if the work were, like Whitman's "Orthopædic Surgery," a trans-Atlantic production.

There is no doubt that the republication of Mr. Tubby's articles in volume form will be welcomed by practitioners who cannot spare time to study larger treatises.

PRÉCIS DE CLINIQUE SEMILOGIQUE.

Diagnostics, Prognostics et Traitements. Eleventh edition. By GASTON LYON, Ancien Chef de Clinique Médicale de la Faculté. Paris: Masson et Cie. 1924. Fr.28.

THIS little French volume seems to correspond with our "Hutchison and Rainy" and to fulfil its purpose extremely well. It deals very carefully with the method of examination of the patient as a whole, and of each particular system, and with laboratory methods of investigation. A comprehensive chapter on prognosis closes with a number of special cases in which a prognosis is urgently required. The concluding part, on therapeusis, includes reference to most of the modern methods. For any student entering upon his clinical work this book would be of value, both for preliminary reading to give him a good general idea of the ground he has to cover, and as a bedside companion when he is learning to examine cases. The practitioner, too, will find interest and information in the up-to-date presentation of work which is liable enough to become an incompletely fulfilled routine.

DIVAGATIONS OF A DOCTOR.

By ALEXANDER JAMES, M.D. Edinburgh and London: Oliver and Boyd. 1924. Pp. 192. 6s.

THE divagations of doctors have led to the production of books which are among the treasures of literature. We need only mention the works of Sir Thomas Browne, and of his near namesake, Dr. John Brown, who wrote those two classics, "Pet Marjorie" and "Rab and His Friends," and in the same class Osler's "Essays." Somewhat lower in the scale are Benjamin Franklin's "Essays," Moxon's "Pilocereus Senilis," and those excellent bedside books by Andrew Wynter "Our Social Bees" and "Curiosities of Civilisation." Dr. James discourses pleasantly upon such subjects as socialism in evolution, juvenile crime, tuberculous disease, and germ- and State-made "millenniumitis." He is no lover of the Education Act of 1872, and many will agree with him in his view that the Act has not produced benefits in accordance with the hopes of its begetters, that it has lessened parental responsibility, and, finally, that most persons do not rightly value what they do not pay for. In lighter vein is the Æsculapian Oration on its 150th anniversary, a delightful piece of scientific fooling for the most part, though full of sound sense. As for the occasional songs, they naturally lose some flavour when the occasion has passed, but even so the whole book makes pleasant reading.

JOURNALS.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Vol. LXVIII., Part 4. November, 1924. Edited by E. S. GOODRISH, F.R.S. London: Oxford University Press. £1 1s.—The latest number of this excellent journal is essentially like its forerunners of recent years—that is to say, it exhibits such a variety of contents that specialists in every direction need to consult its pages, while finding therein room for their own contributions to biological science.—Pure embryology finds its exponents in Prof. J. P. Hill, of University College, and a pupil in their contribution to the early development of the cat.—"Natural History," not anatomical, is represented by Prof. W. C. McIntosh, whose exposition of structure and life-histories of the polychætous annelids is so well known; his communication is entitled Two Tubes of Polyodontes and on the Discharge of the Ova in Thelepus.—Prof. E. N. Pavlovsky, of Petrograd, deals with the anatomy and some points in the development of a variety of scorpions, in continuation of a considerable series of memoirs upon this group of arthropods contributed to other journals in the immediate past.—Two contributions, one by Mr. J. F. G. Wheeler on the Growth of the Egg in the Dab, another by Mr. G. R. de Beer on the Ophthalmic Nerves in Some Fishes, complete the list.

AMERICAN JOURNAL OF PATHOLOGY. Vol. I., No. 1. January, 1925.—In September, 1923, the *Journal of Medical Research*, founded by Dr. Harold C. Ernst, became the official publication of the American Association of Pathologists and Bacteriologists under the control of a strong editorial board with Dr. Frank B. Mallory as editor-in-chief. It now, under the same auspices, becomes the *American Journal of Pathology*, and is to be published bi-monthly, making a volume of at least 600 pages a year. The subscription rates remain the same—viz., $5.00 in the United States, $5.50 in Canada, and $6.00 for foreign countries. The alteration of title is all to the good, for "medical research" embraces far too big a field to be served by any one publication, and the new journal is frankly restricted to pathology, especially morphological pathology. The number contains ten papers. Ernest W. Goodpasture contributes four separate articles dealing with Experimental Herpes and Herpetic Encephalitis in the Rabbit. He concludes that the herpetic virus reaches the central nervous system from the periphery by growth along the axis-cylinders of nerves. Herpetic lesions are associated with the appearance of minute, though characteristic, intranuclear inclusions.—Louise H. Meeker writes on Riedel's struma, describing a case which was associated with remnants of the post-branchial body. The article is well illustrated by drawings of microscopic preparations.—E. R. Saleeby describes a case in which two tumours composed of practically normal bone marrow were found at autopsy in the thoracic cavity, adherent to but distinct from the ribs. He discusses their significance.—In Microglia and the Process of Phagocytosis in Gliomas, Wilder Penfield discusses for the first time the relation of these cells to gliomas; their function is that of active phagocytosis. This article is also illustrated by drawings.—In The Formation of Macrophages, Epithelioid Cells, and Giant Cells from Leucocytes in Incubated Blood, Margaret Reed Lewis brings the tissue culture method to bear on the polyblast question. The technique adopted was simply the incubation of hanging drops of blood.—Studies on Blood Fibrin, by E. W. Schultz, J. K. Nicholes, and J. H. Schaefer. The authors show that the fibrinogen content of blood is increased by tissue injury, including mild liver injury. Liver necrosis causes a diminution in the amount of fibrin which disappears altogether with complete destruction of the liver.—The Relation of Chronic Poisoning with Copper to Hæmochromatosis, by F. B. Mallory. The author met with ten cases of hæmochromatosis in one year's autopsies. The pathology of the condition is fully discussed and the conclusion is reached that the essential cause is chronic poisoning with copper. The source of the copper is the vessel used in the preparation of food or distilled liquors, and the disease is also an industrial one, occurring in workers in copper. The condition develops very slowly, taking some 15 to 25 years to declare itself.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 14, 1925.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

THE histories of the origin and development of the medical schools of the United Kingdom cannot fail to be of absorbing interest to anyone concerned with the broad aspects, or even the details, of medical education. Some of them have grown in established seats of learning, homes of the humanities, where the struggle for recognition has been long and arduous, if, indeed, it has even now entirely ceased. Others have formed, as it were, the nucleus on which the other faculties of the university have crystallised. Yet others have developed out of the private schools of eminent teachers and have always had a frankly utilitarian purpose. But whatever their origins they are now in all essentials stabilised; only one, the Welsh National School of Medicine, whose home is in Cardiff, is still in the making.

The beginnings of medical education in Wales date back to 1893, when, in addition to the teaching of the first-year subjects already in existence as part of the science school, departments of anatomy and physiology were founded at the University College of South Wales and Monmouthshire, Cardiff. In 1909 the Treasury gave a special grant of £1500 per annum to the medical school which enabled a chair of pathology and bacteriology to be established at the Royal Infirmary. It was obvious that the matter could not rest here; the desire for a complete National School of Medicine was strong in the Principality, and in 1914 a deputation representative of university education in Wales presented a memorandum to the Chancellor of the Exchequer on the proposed completion of the medical school. In the next few years the whole question of university education in Wales, and especially medical education, was considered by various important bodies, including a Royal Commission presided over by Lord HALDANE, which numbered Sir WILLIAM OSLER among its members. The Royal Commission recommended that the school of medicine should be constituted an independent college of the University of Wales, and the medical faculty, the Board of Medicine of the school, and the managers of the Cardiff Royal Infirmary have endorsed this recommendation. More recently the matter came before the Council of the University of Wales, which decided that the school should be separated from the local administration of Cardiff College and should be established as a constituent school of the university with its own administrative authorities, directly responsible to the university. The reasons which influenced these responsible authorities in coming to this decision are difficult to appreciate without a complete understanding of conditions, but the question of administration must have weighed very heavily with them. Under the existing conditions there are upwards of ten different bodies or committees which in one way or another exercise jurisdiction over the school of medicine. Some of them, and some of the important among them, are of unwieldy size; while of their members it may justly be said that the majority can have little or no first-hand knowledge of the needs of a modern medical school. In an old-established institution a multitude of committees may not be harmful; they may have been called into being to meet existing needs; they may even at times serve as useful safety-valves. But a young, expanding school must have freedom to grow; it needs the wise guidance of the knowledgeable few rather than the control of the uninstructed many. Another cogent reason for the fusion with the University is the undoubted desire of the Welsh people for a National School of Medicine. A practical proof of this was given in the response to an appeal for funds made on behalf of the school by the University of Wales to the Welsh people. Not only was money obtained in the form of subscriptions from individuals all over the country, but an ½*d.* rate was given by every local authority in the Principality. Now the Federal University of Wales consists of four constituent Colleges: those of Aberystwith, Bangor, Cardiff, and Swansea, in all of which Welsh students can obtain University teaching in most faculties. But there is only one medical faculty, and it is part of Cardiff University College. It is not unnatural to suppose that the rest of Wales may ask why the National School of Medicine should be the property, as it were, of a single one of the constituent Colleges, especially if the school itself is dissatisfied with this close association. This consideration might well have weighed with the Federal University, which, as recipient and distributor of all grants in aid of the University and its Colleges, is naturally concerned lest the school might become a financial burden if this support from the rates were withdrawn.

There is, of course, another side to the question, or there would be no opposition to the separation of the school of medicine from Cardiff College. This opposition is genuine and not merely the expression of respect for vested interests. But it seems to be based chiefly on a misconception as to what is meant by separation. If separation meant the withdrawal of the school of medicine from the academic life of Cardiff College and from association with the Federal University, few would be found to advocate it. But, as Sir CHARLES SHERRINGTON, P.R.S., points out in a judicial article in the *Western Mail* of Feb. 7th, the very reverse is intended. If the proposals are carried out the school will be brought into closer connexion with the University itself, while the existing cross representation between the academic authorities of the school and the College will continue. The school will only be independent in the same sense that the College is; it will, of course, be a constituent part of the Federal University, as the College is, and administratively and financially it will be governed by the University. An argument against separation, one upon which considerable importance seems to be placed locally, is that the general culture of the medical students will suffer if they are separated from their fellow undergraduates in the other faculties. But this argument scarcely bears examination. The social amenities of the older residential universities can never be enjoyed in modern universities situated in large cities. A student may spend six extremely profitable years at a London hospital without exchanging one single word with an arts or a divinity student. In working hours there is an inevitable tendency for birds of a faculty to flock together; in their social intercourse there is not the slightest reason why the different faculties in Cardiff should not mingle in the future as they have done in the past. The whole weight of considered opinion is so strongly in favour

of the proposed separation as the natural solution of a difficult situation that it cannot but come to pass. It is to be hoped that it will not be unduly delayed, so that the Welsh National School of Medicine may develop unhampered along the progressive lines sketched out by Sir WILLIAM OSLER.

HYGIENE OF THE NOSE AND NASO-PHARYNX.

THE function of the nose is to warm, moisten, and filter the inspired air; and this function is performed in such an efficient manner that in normal conditions the air, by the time that it reaches the naso-pharynx, is sterile, saturated with aqueous vapour, and raised to the body temperature. The current of air, passing in through the narrow anterior nostrils in a rapid compact stream, on entering the wider irregularly shaped nasal passages, slows down and is broken into a number of sluggish eddies which, coming into intimate contact with the warm moist surface of the mucous membrane, deposit their dust and receive warmth and moisture. For this purpose a considerable activity is required from the mucous membrane; it has been reckoned that it contributes half a pint of water a day to the inspired air. It is well equipped for its work, being freely supplied with blood to warm, glands to secrete moisture, and ciliated epithelium to sweep the mucus-entangled dust backwards to the throat. If the normal activity of secretion is disturbed, as in anæmia or dyspepsia, dryness results; or, if part of the mucosa is replaced by scar-tissue, a scab of dry mucus forms. Hence the importance, in operations in the nose, of interfering as little as possible with the normal mucous membrane.

Under the healthy conditions of a simple open-air life these functions are ordinarily well performed, any extra mucus is easily expelled by blowing the nose, and artificial assistance is quite unnecessary and, indeed, likely to be harmful. It was remarkable, in the war, that soldiers living under primitive conditions, in wet and muddy trenches, were seldom afflicted by catarrhal troubles; but among those living in the circumstances of modern life in civilised countries, especially in towns, these troubles are only too common; in the United States they are especially frequent, and the predisposing factor is probably the over-heating of houses which results from the prevalent system of central heating. The proper cure for catarrh is, therefore, a return to the simple life; unfortunately, this is rarely possible, but the nearer it is approached the better. Sufficient open-air exercise and, above all, well-ventilated rooms and houses are the great preventives; draughts are less severe when plenty of windows are open, but a small opening into a hot room causes a concentrated current of air. The custom, common among nurses, of cleaning the nostrils of infants with a pledget of cotton-wool is unnecessary, though harmless; but, as soon as the child is old enough, he should be taught how to blow the nose. The proper method of performing this simple act is to close one nostril with the finger and to blow steadily and strongly down the other, and then to repeat the process through the opposite nostril. Both nostrils should never be closed at once during the blowing; this is obviously ineffectual in clearing the nose, and may blow discharge through the Eustachian tubes. Sniffing is an unpleasant and unsocial habit; but if a child cannot blow the nose properly, it is better even that he should sniff and swallow stagnant secretion than leave it in the nostrils; the catarrh or obstruction should be cured rather than the child punished for sniffing.

Nasal obstructon is a common cause of chronic catarrh and of susceptibility to colds; mucus tends to stagnate behind such an obstruction and to form a nidus for the growth of micro-organisms. It often, however, takes years for such catarrhs to develop seriously; cases of deviation of the septum frequently suffer but little inconvenience in their youth, and only develop much discomfort from catarrh when middle age is reached, after which time the condition steadily becomes worse. In childhood, adenoids are the common cause of persistent catarrh, and are themselves due to repeated attacks of catarrhal inflammation; the possibility of their prevention is a matter of importance. Something can be done by attention to ventilation, open-air exercise, and general hygiene; and something by seeing that young children learn to remove excessive secretion by proper blowing of the nose. In the early stages, when some nasal obstruction has developed, breathing exercises regularly performed improve the ventilation of the naso-pharynx, help to remove stagnant secretion, and so break the vicious circle; but when the naso-pharyngeal tonsil is so enlarged as decidedly to obstruct nasal respiration, breathing exercises will not effect a cure, and may do harm by increasing the deformity of the chest. The use of irritating snuffs to encourage sneezing has at times been widely recommended; theoretically, at least, it would appear that irritation of the delicate nasal mucosa must be hurtful. "Handkerchief drill" in schools, to encourage proper blowing of the nose, is excellent and should be more generally adopted. In infants and young children with catarrh, 20 or 30 drops of warm normal saline lotion may be dropped down each nostril from a fountain-pen filler while the head is thrown back; this undoubtedly removes secretion and clears the nasal obstruction, while it appears to be quite harmless and to cause shrinkage of the adenoid in its early stage of catarrhal swelling. There is no danger of choking an infant if not more than 30 ♏ is used at a time. In older children, over 6 or 7 years of age, and in adults, the effect is best obtained by washing out the nasal passages. Much controversy has arisen over this, the principal objection being that it can cause inflammation and suppuration of the middle-ear. But it does relieve and cure many cases of nasal and naso-pharyngeal catarrh, and, if certain simple precautions are taken, there is little danger of spread of inflammation to the ear. The lotion should be at or slightly above body temperature; it must be quite unirritating and painless and should consist of normal saline solution, or of a similar isotonic mixture of harmless salts; plain water is hypotonic and damages the delicate epithelial cells, and any powerful antiseptics are harmful. It must never be used while there is a raw surface resulting from an operation, as after the removal of adenoids, or in the acute stage of a cold, but is valuable when the "sticky" stage has been reached. The flow should be interrupted if any gagging occurs, and this happens automatically when a syringe, and not a gravity douche, is employed. Probably the best instrument is a 2 oz. indiarubber ball with a short firm nipple of the same material moulded in one piece; it is easily sterilised by boiling, and is too small to produce any considerable pressure; if there is unilateral obstruction, as from a deflected septum, the syringe is applied only to the obstructed side, so that there is a free exit for the lotion from the other. The patient fits the syringe to one nostril, inclines the head forward, and breathes deeply through the open mouth, while he slowly squeezes the ball

empty and the lotion trickles out by the opposite nostril; this is ordinarily repeated through the other nostril, and then the nose is gently blown as already described. A child of 6 or 7 years of age can easily do this for himself, and soon appreciates the increased comfort it brings to a stuffy nose; it is better that he should do it himself, for he immediately relaxes the pressure if he gags. He must be particularly careful not to close both nostrils at this stage, or a cracking may be felt in the ear, and it is in this way that the ears may become infected. But such an accident is certainly very rare, and the good which results from this procedure in cases of catarrh is very definite; for some patients susceptible to colds, its regular use through the winter months serves as a decided preventive.

REX v. BATEMAN.

THE decision of the Court of Criminal Appeal to quash the conviction of Dr. PERCY BATEMAN corrects a manifest miscarriage of justice, and will be in every way satisfactory to the medical profession. A report of the arguments of counsel appears upon another page, but the Court, while quashing the conviction, decided to give their considered reasons in judgments later. We regard the result with peculiar satisfaction, not only because Dr. BATEMAN is to be congratulated upon having been saved from a period of degrading imprisonment which he had done nothing to deserve, but because a precedent has been established for the reviewing of a jury's verdict which had been delivered upon an interpretation of medical evidence. New facts were not brought forward, but the old facts were made to wear their right interpretation. To those who could understand the scientific evidence as it was given, the original verdict appeared wrong. The story of the circumstances in which Dr. BATEMAN'S patient died, and in which he was convicted of manslaughter by criminal negligence, has been read and considered by a large number of his colleagues, liable through the nature of their practice to find themselves performing their professional duties in a like situation. These have, of course, been more capable than any jury of basing a correct opinion upon the clinical evidence. They will have seen, as indeed did the jury, that the injuries following a complex presentation were the cause of death, but did not imply such negligence on the part of the operator as would justify his conviction for manslaughter. Medical men will also have appreciated, as a jury would not even though properly guided by a judge, that the physical injuries that affected the deceased did not by themselves prove guilt, but that their occurrence was equally consistent with complete innocence. And under the conditions in which Dr. BATEMAN found himself, in spite of the exercise of all reasonable care and skill, such tragedies may fall out. We have not here a specialist working in the ward of a hospital or nursing home, or in the convenient environment of upper or middle-class practice, but a general practitioner attending a poor patient in a poor man's room; and with the conditions obtaining in such places many general practitioners are familiar. The conditions determined the tragedy. Medical men must have wondered what standard of skill and care had been laid before the jury by the judge who tried Dr. BATEMAN as necessary for a medical man to reach in order to avoid a criminal charge on the death of a patient in whose case, in popular phraseology, "Something had gone wrong."

Annotations.

"Ne quid nimis."

CANCER AND GOITRE.

GOITRE is endemic in certain parts of Switzerland. That country has also the highest death-rate from cancer, and this high death-rate is due mainly to the frequency with which the upper part of the digestive tract is attacked by cancer. Thus the mortality per 100,000 from cancer of the œsophagus and stomach in males is 75·4 for Switzerland, as compared to 21·6 in England and Wales; in females it is 46·2 for Switzerland, 16·2 for England and Wales. For all other organs combined the rates are—in males, 45·7 for Switzerland, 55·7 for England and Wales; in females, 72·0 for Switzerland and 86·5 for England and Wales. These facts suggest the possibility that a common factor may be involved in the incidence of goitre and of cancer, and raise the further question whether a condition of hypothyroidism renders the body more liable to develop cancer.

The current number of *Biometrica* (vol. xvi., December, 1924) contains a paper by Dr. Percy Stocks in which he tries to answer these interesting questions by a comprehensive statistical investigation. He finds that in those regions in Switzerland where goitre is frequent there is also a higher incidence of cancer of the stomach and œsophagus than in areas where goitre is less frequent. The same is stated to hold good for other goitrous regions in Europe and in the United States. Graves's disease, on the other hand, shows a negative correlation with cancer mortality. A consideration of 1000 post-mortem records from the Middlesex Hospital shows that enlargements and other anomalies of the thyroid gland are more frequent in cancer cases at death than in non-cancer cases, and these anomalies are of the types usually associated with depressed thyroid function. The general conclusion is drawn that defective functioning of the thyroid gland is favourable to the incidence of cancer of the stomach and possibly of other organs also, and it is suggested that the administration of iodine after middle age, as practised in Switzerland for prophylactic purposes against goitre in young people, might result in diminishing the incidence of cancer.

A number of objections suggest themselves to these conclusions. The statistical evidence does not show that cancer of the stomach is more frequent in individuals suffering from goitre. It only shows that in some countries it has a similar regional distribution as goitre. It is known that goitre is more frequent in women than in men, while cancer of the stomach is more frequent in men than in women. That is contrary to what we would expect if hypothyroidism predisposed to cancer. Moreover, no reference is made to countries like Holland—which are not goitre countries, but where cancer of the stomach has an exceptionally high incidence. If a direct relationship between the incidence of goitre and of cancer of the stomach existed, there ought to be clinical evidence in goitrous countries such as Switzerland of a frequent coincidence of the two diseases in the same individual. So far as we are aware so such evidence exists. The argument based on post-mortem findings is fallacious, because cancer is a chronic disease entailing prolonged inactivity of the patient with treatment by drugs. That in itself might account for the abnormalities found. The slightly diminished incidence in Graves's disease is readily explained by the fact that Graves's disease has a much higher mortality than goitre, especially if we include affections of the heart resulting from the disease. It is, moreover, not an endemic disease, and, unlike goitre, is not dependent on environmental conditions which affect the whole population living in a district where the disease occurs. We mention these objections, not because we wish to deny that a correlation between thyroid activity and incidence of

cancer exists, but in order to illustrate the limitations of statistical methods in investigating such a complex medical problem, even when they are applied with the competence and care which distinguish Dr. Stocks's investigation. If the relationship between thyroid activity and cancer incidence exists which Dr. Stocks postulates, then there are direct methods available to demonstrate it. The basal metabolism is generally recognised as a measure of thyroid activity. By determining the basal metabolism in various diseases of the stomach, including sufficiently early cases of cancer, it should be possible to obtain more direct evidence on the interesting question which Dr. Stocks has raised. Until such direct evidence is obtained, the suggestion of indiscriminately dosing with iodine must be considered premature. In Switzerland the suspicion has arisen that the continued use of iodine to prevent goitre may lead to the production of exophthalmic goitre.

"BRONCHIAL SPIROCHÆTOSIS."

MUCH has been written in recent years upon a pulmonary condition to which the term bronchial or broncho-pulmonary spirochætosis has been applied. Dr. Y. Schwarz recently described in THE LANCET [1] five cases which he had had under his care in Cairo, while a case in a suspected tuberculous subject at Montana was described in our correspondence columns[2] on Jan. 17th. In the last-named case a radiograph showed a definite opacity at the apex of the right lung. Bronchial spirochætosis was first described by Castellani,[3] who based his diagnosis on the presence of numerous spirochætes in the sputum of two cases of hæmorrhagic bronchitis observed by him in Ceylon in 1904. Since that time a considerable literature has gathered round this subject. Macfie,[4] Galli-Valerio,[5] Violle,[6] Dalimier,[7] Dargallo,[8] Farah,[9] Mendez,[10] Robert,[11] Korthof,[12] Carini,[13] Browne,[14] de Mello,[15] Risquez,[16] and Faust [17] have reported cases from Africa, France, Italy, Switzerland, Spain and Portugal, England, Brazil, Venezuela, China, and Dutch East Indies. These papers, though informative regarding the cause of the disease, its treatment, and manner of spread, are curiously silent regarding its true pathology. Some underlying pathological condition has been presumed to exist, but the possibility of the spirochætes complicating other well-known pulmonary conditions, such as tuberculosis, appears to have been overlooked. The question of the relationship of the spirochætes of the mouth to one another and to the *Spirochæta bronchialis*, described by Fantham,[18] in 1915, needs clearing up. Fantham regarded this organism as distinct from other spirochætes occurring in the mouth, whereas Schwarz,[1] in his recent paper, figures these organisms associated with fusiform bacilli as in the case of the familiar Vincent's spirochæte; in both instances recorded pyorrhœa alveolaris was present, in the pus of which these latter organisms abound, and Vincent [19] himself believes *S. bronchialis* and *S. vincenti* to be identical. Moreover, the specificity of *S. buccalis* and *S. dentium*, which can be universally demonstrated in the oral cavity, is by no means decided. Mühlens,[20] in discussing this question, declares that German pathologists regard spirochætes in the sputum as being of little importance. These organisms, he says, are found in enormous numbers in inflammatory conditions of the mouth and pharynx, and, under suitable conditions, may spread to the lungs. He is therefore of the opinion that broncho-spirochætosis is not recognisable as a characteristic disease. Pons,[21] basing his opinions on observations made in Saigon, has also come to the same conclusion. Dental caries, he finds, greatly favours the presence of spirochætes in the sputum. He was fortunate enough to secure an autopsy of a patient who had been expectorating spirochætes in blood-stained mucus, but no pleuro-bronchial lesions could be found to account for it. In the bronchial mucus itself there were no spirochætes, but as the higher portions of the respiratory tract were reached, they became more numerous. It appeared logical to conclude that the spirochætes in the sputum before death were identical with those occurring in the mouth, so that, in considering the morphology of these spirochætes, he is driven to the conclusion that it is practically impossible to differentiate *S. buccalis* from the so-called *S. bronchialis*.

Under these circumstances, it is surely somewhat venturesome to speak of bronchial spirochætosis complicating pulmonary tuberculosis as in cases quoted by Bloedorn and Houghton,[22] and Korthof [12] and to a recent review by Delamare.[23] In the cases recorded by Pons, the probable sequence of events is that an invasion of the respiratory tract by spirochætes from the mouth takes place under conditions which facilitate their multiplication as in pulmonary tuberculosis; for, when the patient makes a good recovery from the latter, the spirochætes tend to disappear. The authenticity of this condition having been criticised upon unquestionably sound evidence, it would be advisable for the whole matter to be reconsidered, in light of recent facts, before accepting, without cavil, bronchial spirochætosis as a distinct clinical and pathological entity.

THE ÆTIOLOGY OF ALOPECIA AREATA.

THE ætiology of alopecia areata has long been the subject of worry among its victims, who express disappointment amounting to indignation that neither prevention nor cure of this disfiguring malady is in their power. It is at any rate possible to comfort them by the assurance that though a family tendency to patchy baldness may exist, the majority of dermatologists see no reason to regard the condition as contagious. Sir Norman Walker, in the new edition of his book, which we review in another column, is one of few who still clings to the suspicion that alopecia areata is due to an external infection. But the evidence for this theory will hardly bear analysis. Haldin Davis and others have shown the explanation of at least some of the alleged epidemics in schools and institutions to be imitation of one or two genuine cases; the interest aroused by the earlier cases has led to other children "plucking" their hair, producing what may be called "alopecia artefacta"; others, as Sabouraud points out, have been epidemics of impetigo, the impetiginous areas on the scalp having become denuded of hair. The familial incidence of alopecia areata is much less common than of psoriasis; yet Sir Norman Walker does not suggest that the latter disease is contagious, but is inclined rather to make light of the hereditary factor in its ætiology. A study of the evolution and nosology of alopecia areata, and of the mode of formation and characteristics of the exclama-

[1] Schwarz, Y.: THE LANCET, 1924, ii., 1331–34.
[2] Hudson, B., and Others: THE LANCET, 1925, i., 156.
[3] Castellani, A.: THE LANCET, 1906, i., 1384.
[4] Macfie, J. W. S.: J. Trop. Med. and Hyg., 1915, xviii., 63–65.
[5] Galli-Valerio, B.: Correspondenz-Blatt. f. Schweiz. Aerzte, 1917, xlvii., No. 6, 169–175.
[6] Violle, H.: Bull. Soc. Path. Exot., 1918, xi., No. 1, 39–47.
[7] Dalimier, R.: Presse Médicale, 1919, xxvii., No. 14, 124–125.
[8] Dargallo, R.: Rev. Espanola de Med. y Cirugia, 1919, ii., No. 12, 323–325.
[9] Farah, N.: THE LANCET, 1919, ii., 608–609.
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tion-mark hair, leads inevitably to the incrimination of the sympathetic fibres supplying the hair-bulbs. A point of great significance is that in the formation of the exclamation-mark hair there is an alteration in the distribution of the pigment, which becomes collected into clumps at the distal end, while the proximal part is completely depigmented. This pigmentary change is exactly analogous to that which occurs in vitiligo, and the two diseases are frequently associated, one or both being common in Graves's disease, in which disturbance of the sympathetic is so predominant a factor. It is impossible to reconcile these facts with the theory of external infection, The exhaustive researches of Sabouraud, himself at one time a protagonist of this theory, as detailed in his latest work on diseases of the scalp, should surely have disposed of it.

THE ANTIQUITY OF MAN.

IT is strange to reflect that at the time of the foundation of THE LANCET it could never have occurred to its average reader to doubt that an act of special creation had introduced his first parent to this earth in a condition of human, if bucolic, completeness at a date, fixed at some 4000 years B.C. Yet now Sir Arthur Keith has given us two volumes of familiar discourse on the habits and features of man and his pre-human ancestors, to which we referred last week,[1] in which the reader is referred back to a period 200,000 years earlier, and told that there is still a question as to whether the time estimate is not still too conservative. And following hard on the re-issue of Sir Arthur Keith's book comes news from Africa of a new anthropological find promising to be one of the most significant in the history of geological excavation. The fossilised skull brought to light through the enthusiasm of Prof. Raymond Dart and his colleagues of the University of the Witwatersrand, Johannesburg, and described by him in last week's issue of *Nature*, is judged to be that of a child of six, from the fact that the first molar only, of the permanent dentition, is erupted. It is particularly interesting in that there has been preserved in the limestone matrix a more than usually complete picture of one cerebral hemisphere. A certain amount of caution has to be exercised in drawing conclusions from the bony formations of a skull so young as this. As is well known, the young of allied species tend to resemble each other more closely than do the adults, and the distinctive prominences and contours of the skull are not developed until later years. But there appears to be no such change in the general proportions and pattern of the brain, so that when we find in this child a brain actually larger than that of the adult chimpanzee, and presenting a rounded outline in striking contrast to the flattened parietal appearance of the ape brain, we cannot refuse to admit the claim of the individual to a proportional psychological development of the higher mental functions. The "parallel sulcus" balances the general expansion of the cerebrum by providing a distinctly pithecoid feature. In the skull also a similar mixture of humanoid and anthropoid features is found. The brain development is reflected in the proportions between the brain case and the facial portion, which place the fossil about midway between the young gorilla and the modern human. The same intermediate character is seen in the position of the foramen magnum, from which the degree of uprightness of gait may be deduced. The "head balancing index" used by Prof. Dart to illustrate this point places the new specimen between the chimpanzee and the Rhodesian skull. The orbits and nose are distinctly human in their formation, as are the teeth. The jaw, however, is massive, particularly so considering the youth of the individual, although the fashioning of it is human, in the slenderness of the ramus, the absence of a "simian shelf," and the relatively vertical direction of the anterior symphysial outline. It has, in fact, attained a degree of development which brings it into line with Heidelberg man. To give this specimen a definite place in the evolutionary series would be premature at present; it will doubtless arouse as much expert discussion and controversy as its predecessors. But those whose pictorial imagination likes to hasten in advance of the slower methods of anthropometry will probably associate the name *Australopithecus africanus* with a race of creatures somewhat larger than chimpanzees, walking habitually upright, if with a rather stooping gait, living probably a solitary or limited family life (for the great link of speech had not yet been acquired), but able to profit by experience and to store memories with sufficient adequacy to make headway against the difficult environment of the African climate and dangerous veldt life; they could lay down by the use of eye, ear, and hand those new associations, new deductions, and new meanings which formed the germ of *Homo sapiens*.

Meanwhile the more cautious will turn, with even greater enthusiasm than before, to the new and revised edition of "The Antiquity of Man." The issue of this manual of up-to-date information is indeed timely, for only those acquainted with the wealth of knowledge so charmingly presented therein can appreciate and assess the value of the new skull. The general matter and manner of the book are well known. The author takes us out on a tour of the world, choosing the geographical method rather than the historical for the presentation of his material. Wherever we alight he beguiles us with easy conversation as to the surrounding country, the folk-lore, and the history of the area around us, until we are ready to be introduced, almost personally, to the dead and gone inhabitants of many ages past. We see them at work, at play; we consider their features, their ornaments, their works of art, their implements, and household possessions. And almost without our realising it we are instructed in the latest scientific knowledge and the most elaborate specialist opinions about them. Upon Sir Arthur Keith has descended the mantle of the prophet Ezekiel, who prophesied unto the dry bones so that they lived and stood upon their feet, an exceeding great army. Since the publication of the first edition, ten years ago, new material has come in from all parts of the world: Palæolithic Englishmen in the Mendips; early roundheads at Solutré; rugged Nordic types at Bonn; at Ehringsdorf, Neanderthal men intermediate between Heidelberg man and the French Neanderthals; the illuminating Ghar Dalam caves of Malta, and, finally, the extremely significant Talgai man of Queensland and the African series of discoveries culminating in *Homo rhodesiensis*, that pathetic Pleistocene sufferer from toothache and "rheumaticks." With all these Sir Arthur Keith deals, weaving them into the matter of his earlier edition with that combination of erudition and fascination so peculiarly his own. The first two chapters of the second volume are devoted to the Broken Hill skull, which is compared, whimsically enough, with that of Sir Thomas Browne, and is placed on a line of its own, separated off from the general human stem somewhere in the Pliocene. The later chapters deal with such subjects as Heads, Brains, and Teeth, as found in early man, and the final one discusses some general conclusions, which are well illustrated in the diagram that forms the frontispiece. The original evolutionary hypotheses were direct descendants of the popular scientific custom of arranging all known objects, from the angel to the stone, in order of their elaboration, and the early evolutionists did but give a shake to the "Echelles des êtres" and turn them into living stairways or escalators, each step still neatly placed in its order. Such conceptions have long since given way to the simile of the "tree of life," and that branch of the tree which deals with man has many

[1] The Antiquity of Man. Revised edition. By Sir Arthur Keith, M.D., F.R.S. London: Williams and Norgate, Ltd. 1925. Two volumes. With 266 illustrations. Pp. 753. 25*s*.

spreading side-branches. The only relics that Sir Arthur Keith places on the direct line of modern European ancestry are the Cro-Magnon, Combe Capelle, and Grimaldi men. The Talgai and Boskop specimens lead directly on to modern Negroid and Australoid types respectively, but all the other traces that research has revealed do but tell us of the many abortive efforts made by Nature to produce that strange phenomenon *Homo sapiens*. It will be interesting to see where *Australopithecus africanus* takes a place in the genealogical tree when a further edition of this popular classic is called for.

THE HÆMOPHILIC BLOOD.

IT was pointed out by the late Prof. Baylis in his monumental "Principles of Physiology" that the current theories of the coagulation of the blood are merely a schematic representation of observed facts and that the actual existence of the numerous postulated "pro" and "anti" bodies is as unlikely as that of the amboceptors and haptophores of Ehrlich. The hæmophilic diathesis has always been a peculiarly happy hunting ground for the exponents of this particular class of theory, and few workers in the field have omitted to locate the cause of the failure of the clotting process in a deficiency of one or other of these hypothetical factors. The work of Pickering in this country seems to have proved the non-existence of "anti-thrombin" at any rate, and consequently to have endangered the safety of the whole fabric of the hypothesis, while the latest observations on the hæmophilic diathesis lend no support to the current conception. The authors of these most recent observations, Drs. Hans Opitz and Hedwig Zweig,[1] of Breslau, although obviously starting out with a marked bias in favour of the school of Morawitz and Howells, were forced to the conclusion that the hæmophilic diathesis does not depend on the absence of some one link in the coagulation process but is the expression of a profound alteration in the constitution of the blood. Using as the subjects of their research three well-recognised hæmophilics, these workers first tested the relative power of the constituents of normal and hæmophilic blood in bringing about the inception of the clotting process in whole blood of normal and hæmophilic origin. They found that the constituents—serum, red cells, hæmoglobin solution on platelets—from either hæmophilic or normal sources were equally active in bringing about clotting in normal blood, an observation which points to no lack either of kinase or prothrombin in hæmophilic blood. With hæmophilic whole blood they found the case somewhat altered; here the individual constituents of hæmophilic blood showed themselves somewhat less active than those of normal blood. From this they concluded that the actual cause of the comparative failure of coagulation in hæmophilia must lie in a slowing down of the process of formation of the fibrin ferment. Their observations, however, did not end here; extending them to include not only the hæmophilic patients but also their mothers they found that the blood of both presented three striking departures from the normal. In the first place, both showed an increased resistance to osmosis on the part of the red cells; in the second both showed a somewhat high calcium content; and in the third the serum from both was completely lacking in the trypanocidal power normally always present. Unfortunately, the observations were not extended to include the non-hæmophilic offspring, but as they stand they appear to indicate that the onset of hæmorrhage in hæmophilics is in the nature of an accident, dependent probably upon a deficiency in fibrin ferment, but occurring in individuals belonging to families characterised by the possession of an abnormal type of blood. This view would add the hæmorrhagic diathesis to that group of diseases of which acholuric familial jaundice and the sickle-cell anæmia of negroes are the two best recognised examples.

[1] Jahrbuch f. Kinderheilkund. 167, den Dritten Folge, 57 Band, Heft 3, October, 1924.

THE CRITERIA OF BACILLARY SPECIES.

A CAREFUL and thorough examination of 89 strains of tubercle and acid-fast bacilli by Dr. G. S. Wilson, of Manchester, is published in the last number of the *Journal of Pathology and Bacteriology* (1925, vol. xxviii., p. 69). Culturally the customary five groups were recognised—human, bovine, avian, cold-blooded, and saprophytic acid-fast. Agglutination reactions show considerable overlapping, and it is not clear that a smegma or timothy grass bacillus could certainly be differentiated from a human tubercle bacillus by this means. Absorption of agglutinins gives clearer distinctions and delimits four groups. But the human and bovine strains remain indistinguishable by these serological tests, and there is no evidence at all of any subgroups within either species. The investigation is of great inherent value and of special interest as raising once again the question of what we mean by "species" among bacteria—a matter of moment to pathologist, epidemiologist, and general biologist. We have here a case where two sorts of bacilli are clearly distinguishable by their pathogenic effects: in crude summary the human bacillus causes phthisis in man while the bovine bacillus does not. The two are almost equally different by their growth on artificial media and by their pathogenicity to animals, though here the distinctions are perhaps quantitative rather than qualitative. But by the most delicate tests which we can apply their chemical constitution is more or less identical, and from a study of the great bulk of analogous examples we know that these tests are tests of the differences between "species" as commonly understood. Other examples of the same kind of thing are known. No one supposed that the cause of epizoötic abortion of cattle had anything to do with the cause of Malta fever until the bacteriologist found that he could distinguish between organisms coming from the two sources only when he was pressed to bring into play his most elaborate armamentarium by the insistence of the epidemiological fact that the two diseases had apparently no connexion with or relation to one another. In his turn the clinician has been forced by the bacteriological evidence to look into human cases more closely and has found two or three examples of what certainly appear to be infection by *B. abortus*, but these exceptions only emphasise the pathogenic distinction between the two "species" of Brucella. Similarly, the practical difference between the organisms of plague and pseudo-tubercle is that the former is pathogenic to rats while the latter is not; culturally they are nearly or quite identical, and animals may be protected against plague with a pseudo-tubercle vaccine. Conversely, we have examples of bacilli which are serologically but not pathogenically distinct. The diphtheria bacillus has been dissected into a number of agglutination strains; the same antitoxin will neutralise their toxins and there is no evidence that they vary among themselves in their pathogenic relations to man. The types of pneumococci, which are beginning to seem less clearly distinct from one another than they were at first, are differentiated by agglutinin and precipitin reactions; one is evidently more important than the others in causing acute lobar pneumonia, but that and other characteristic lesions may be due to any of them. The agglutination groups of the gonococcus seem to have no reflection in clinical practice, nor have those of the meningococcus apart from the question of curative serum.

It is, of course, tempting to speculate as to what this may mean in terms of evolution. Parasitism is presumably a secondary character, and parasitism of warm-blooded animals is certainly a late acquisition; we should therefore be inclined to look to other characters as affording sound diagnostic criteria. On the other hand, the fact of parasitism and especially

the host which is parasitised may well be determined by chemical characters which are the basis of serological distinctions. And our practical men will certainly not be content with a classification which tends to ignore one of the features of a bacillary "species" which is most obvious to us. The evolutionary aspect leads us also to reflect that a thousand years with us is as but a day or two with organisms which can double their numbers in half an hour. We know, too, that current cultures may be dissected into races which are culturally, serologically, and pathogenically distinct, and with this going on under our eyes we should be the more ready to believe that it may happen and may have happened in a wider world than a Petri dish. The clinical counterparts of this seem less definite. But without going into detail the change of type in scarlet fever and the alastrim-smallpox facts are very suggestive; unfortunately, in neither case can we examine the unknown causative agent. At the extremes there are two schools of thought. The hundred per cent. bacteriologist looks upon an infectious disease as the specific result of an organism; to him the same organism means the same disease, and if the organisms are different, then their diseases must be different. To the out-and-out epidemiologist, on the other hand, a disease is a thing quite apart from its cause or supposed cause, and an epidemic has specific characters which can be defined without reference to bacteriology. The common-sense view is that the diagnostic differentiation of both diseases and bacteria may obviously be expected to improve in the future as it has constantly improved in the past, and that no one can lay down which are the best and most reliable characters on which to distinguish and classify bacteria any more than similar criteria for classifying animals and plants in general can be defined. Broadly speaking, and despite many plaints to the contrary, no one doubts very seriously that the customary "species" of the zoologists and botanists represent things which are in effect different from one another; one set of criteria are used in one place, another set in another group, and it is on a general summation of differences rather than by the diagnostic tests which are used for quick practical work that one "species" differs from another. What would be very helpful to the bacteriologist would be some line through which he could get a comparison of the validity of the criteria he uses with those favoured by the systematic biologist. As the bacteria have no obvious structure, the comparison must be made on the only available ground, that of serological distinction. We know roughly that zoological "species" are generally serologically different from one another, but there is room for much more detailed information, especially as to the affinities of known races and varieties. A comprehensive serological dissection of the cabbage in its multiform appearances in cultivation would be illuminating. Is curly kale related to brussels-sprouts as the gonococcus to the meningococcus, or as the types of pneumococci, or as the groups of diphtheria bacilli, or as human and bovine tubercle?

CONTROL OF THE GLOTTIC APERTURE.

RECENT experiments by Sir Charles Ballance[1] on anastomosis of various nerves to the recurrent laryngeal, in an attempt to restore function to a partially paralysed larynx, and the results attained by him and also by Dr. C. Frazier[2] and Chevalier Jackson, of Philadelphia, on the human subject suffering from abductor paralysis, have drawn particular attention to the region of the glottis. The physiological meaning of respiratory opening of this aperture has so far received but little study, and the solution of the problem has been immersed in shadow. A contribution to the subject was recently made by Dr. Siegmund Schumacher in the *Wiener Klinische Wochenschrift*,[3] where the author describes how elastic fibres in the crico-arytenoid joint cause the glottis to take up what is known as the cadaveric position on those occasions when the dilator and sphincteric muscles are out of action, or have been removed by dissection. The joint is compared in its mechanical aspect to those found in the vertebral column, the similarity being noticed in the fact that the spine springs back into its former position after it has been disturbed, because of elasticity of inter-vertebral discs and ligaments. The corresponding property of the arytenoid cartilages, by virtue of which a certain position is taken up, leads to the necessity for active muscular contraction when any other position except the cadaveric is to be assumed. Consequently, it is found that during health these cartilages, and therefore the vocal cords actuated by them, are drawn apart or brought together by the action of two sets of muscles—namely, the abductor and adductor groups. So it is seen why dyspnœa occurs in cases of double abductor paralysis; because when one group of muscles is out of action, tonic contraction of the opposing set causes undue movement in a certain direction. And when all the intrinsic laryngeal muscles are paralysed, the vocal cords assume a position determined by elasticity of the crico-arytenoid capsule, together with that of the conus elasticus, reinforced by the action of fat cells contained in the capsule; these cells recoil after compression due to any movement away from their resting position. It is also pointed out in the paper that the vocal cords are quite slack in the position of full inspiration, an observation which renews the doubt felt as to the truth of what is usually described as the mechanism of phonation—namely, by stretching of these structures. Dr. Schumacher, in brief, brings notice to a most important organ, and illustrates the importance of observation of detail, without immediate regard to the clinical aspects of the subject.

[1] Results of Nerve Anastomosis, Brit. Med. Jour., August 30th, 1924.
[2] Treatment of Paralysis of Recurrent Laryngeal Nerve by Anastomosis, Annals of Surgery, Feb. 24th, 1924.
[3] Siegmund Schumacher: Uber den Bau und die mechanische Bedeutung des Bandapparates der Kehlkopfgelenke, Wien. Klin. Woch., No. 39, 1924.

THE OUTSPOKEN AND THE INDECENT.

WE have received from a correspondent a protest against the lack of reticence which he finds to mark the modern novel. "A short time ago," he says, "a weekly literary journal gave a list of the 'best-sellers' among the novels of 1924, and, though these may not live more than a few years they are worthy of study as affording an insight into what pleases contemporary readers. Furthermore, the author of one of them must be claimed as specially expert in his craft." Our correspondent then gives two examples of the sort of thing which he finds objectionable. In the first a wife reports her probable pregnancy in the following words: "By the way, this is my second no go." The second example describes a man and a woman who have met for the first time and are talking about satirical writers, when he says to her: "They must always write about women rather in the spirit of unclean-minded undergraduates who are very upset at not having physically enjoyed their first woman as much as was to be expected." There is no doubt whatever about the nastiness of the second example, and we find it also not a very probable remark for anyone to make. But the first phrase, surely, might be employed between decent married friends. The writer of the letter is a well-known authority on mental disease, and he suggests that if complete lack of reticence is allowed to novelists, the publisher of scientific literature, dealing, for example, with psycho-analytical research, might be advised to escape liability for prosecution by calling his production a modern novel.

Like our correspondent, we regret the prurient indiscretions which mark a good many works of fiction; we are not referring to the selected "best-sellers," which are not mentioned in the letter by name and have not been identified by ourselves. But

we should be loth to criticise adversely books, otherwise good, on the score of sporadic indecencies, and equally loth to believe that it is by these indecencies that a large circulation is commanded. Authors may be returning to the frankness of Shakespeare, which is a very different thing from the lewdness of the seventeenth and eighteenth centuries. Modern authors, at any rate, may feel that, if, to illustrate what a certain kind of man or a certain kind of woman would have said or done in certain circumstances, it is necessary to be coarse, then the coarseness must occur, the nineteenth century taboo of frankness being disregarded. We cannot believe that to write with persistent indecency would bring about pleasant results to a venal author and a complacent publisher with any regularity, such as is indicated by the term "best-seller," and there is an immoral reason for this view, in addition to better reasons. Indecency in writing or speaking depends upon unexpectedness for the amount of amusement which it causes—and therefore for the amount of charm which it must be allowed to possess for the imperfect humanity which constitutes "best-buyers." A habit of reticence is necessary for the full effect of coarseness, and to-day, at any rate, no one would read the works of Ned Ward for amusement. The objection from a literary point of view to indecent allusions and coarse language is valid when the offensiveness is deliberately introduced to prove the freedom from prejudice of the author, and does not occur because truth demands the garniture of dirt or blasphemy.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. R. K. White retires on retd. pay and is granted the rank of Lt.-Col.

V. P. Ellis to be temp. Lt. whilst empld. as a Dental Surg.

TERRITORIAL ARMY.

Maj. (Prov.) A. F. Hewat and Maj. (Prov.) A. J. Brown are confirmed in their rank.

Capt. T. W. S. Hills to be Maj.

2nd Lt. W. A. Ramsay (late R. Scots) to be Lt.

Charles C. P. Anning to be Lt.

Supernumerary for Service with the O.T.C.—Maj. P. H. Mitchiner to be Lt.-Col. and to command the Medical Unit of the University of London O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt. Capt. (Prov.) A. Massey, from the Active List, to be Lt.

ROYAL AIR FORCE.

Flight Lt. C. McC. Jones is transferred to the Reserve, Class D.2.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 24TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely—small-pox, 156; scarlet fever, 1757; diphtheria, 1077; enteric fever, 57; pneumonia, 1477; puerperal fever, 51; cerebro-spinal fever, 15; acute poliomyelitis, 6; encephalitis lethargica, 53; dysentery, 9; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week.

The number of small-pox cases showed an increase of nine over the number for the preceding week. Twenty-two cases were notified from Derbyshire, 30 from Notts, and 69 from Yorks, N. Riding (Middlesbrough C.B., 65).

Deaths.—In the aggregate of great towns, including London, there were 7 deaths from enteric fever, none from small-pox, 15 from scarlet fever, 50 from diphtheria, 62 from measles, and 202 from influenza, as compared with 195, 142, 124, and 100 in the four preceding weeks. In London itself the deaths from diphtheria numbered 17 and from whooping-cough 43.

INDEX TO "THE LANCET," VOL. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CIX.—THE TREATMENT OF TWO CHRONIC SKIN DISEASES.

I.—CHRONIC ECZEMA.

ALMOST every skin affection may become chronic, but probably the two which occur most readily to our minds when we speak of a chronic skin disease are chronic eczema and chronic acne. The term chronic eczema may cover a large field, and it is proposed to take some common clinical types and consider the methods appropriate for their treatment.

Types of Chronic Eczema.

One of the most characteristic forms of chronic eczema is that met with in children from a few years of age upwards towards adult life. The common history of such a case is that the patient has suffered from eczema since infancy—at first the usual form of "infantile eczema," with mask-like distribution on the face and perhaps patches of eczema also upon the limbs and trunk. The eczema, instead of clearing up under treatment or disappearing spontaneously, as it does sometimes at the age of about 2 years, has continued into later childhood, has become less pronounced upon the face and more extensive and persistent upon the limbs and trunk, and especially behind the knees and at the bends of the elbows, though seldom confined to these areas. There may be periods of weeks or of months when the eczema is comparatively though not completely well, alternating with periods when the eczematous areas become red and weeping and more intensely itchy, so that the child is seen to be constantly scratching them. In most cases the skin behind the knees and at the bends of the elbows and at other parts where there is eczema becomes infiltrated and thickened, or, in dermatological language, lichenified by constant scratching. Such children are often thin and have a worried expression from want of tranquillity and of sleep, and they not infrequently suffer from asthma. The pathogenesis of such cases need not be discussed here, but suffice it to say that it is seldom that they can be cured by dieting, by internal medication, or by measures taken to improve the general health. Such means may help to advance the cure, but they are generally of little avail without careful attention to local treatment.

Another common type of chronic eczema is that seen in adults which frequently begins as an occupational eczema upon the fingers and hands and sometimes also upon the forearms. Such occupational eczemas are of common occurrence in those who work with dyes, chemicals (such as photographic chemicals), acids, French polish, formalin, flour, sugar, packing materials, certain woods, strong alkaline soaps, and in dusty occupations generally. Frequently the eruption disappears if the patient discontinues his work for a time, but sometimes it continues with obstinacy for months or even for years, although the patient may have abandoned the occupation which induced it. Then, too, the eruption may appear upon other parts in the form of patches of eczema upon the arms and legs and sometimes upon the trunk—the clinical type known as "patchy eczema."

In persons who have none of these occupations this chronic eczema of the hands and the patchy eczema of the limbs and trunk may sometimes be seen, and it is often attributed to some internal cause; but usually on careful inquiry it will be found that the chronic eczema had its origin, perhaps months or years ago, so that the incident has been forgotten, in a dermatitis,

the result of some local irritant. Contact with a poisonous plant or weed, use of a strong soap, of a patent ointment, prolonged use of sulphur ointment, the application of tincture of iodine, or in various other ways—all these may form the starting-point of eczematous conditions.

Acute Localised Dermatitis the Origin of Chronic Eczema.

The important point is that the more closely we inquire into the origin of these chronic eczemas the more do we find that they have their origin in some more acute localised dermatitis. The dermatitis once established, the skin becomes hypersensitive to any form of local irritant, and this hypersensitiveness extends to other parts so that the eczema appears elsewhere. Here again, as in the chronic eczema of children, it is the scratching which is mainly responsible for the continuance of the eczema, though mere friction of the clothes, too frequent bathing, excessive use of soap and friction with the towel will serve to keep up the eczema. It may happen that a chronic eczema will sometimes get well during a change of diet or under other altered conditions of living, such as residence in a new locality. But other cases under similar changed conditions will not improve, and it seems impossible to lay down definite rules whereby cases of chronic eczema may be cured by dieting or other internal or general treatment.

Management of a Case.

For the majority of cases of chronic eczema the keynote to successful treatment is protection from local irritants and careful attention to local treatments. The first rule in the treatment of chronic eczemas is to avoid the intermittent contact with water, so that as far as possible the patient should wash the unaffected parts without getting into a bath. The affected areas must be continuously protected by some soothing application. One of the most generally useful is a modified Lassar's paste—i.e., Lassar's paste without salicylic acid—thus: R. Zinci oxidi, oz. ½; pulv. amyli, oz. ½; vaseline, oz. 1. The paste should be spread upon small pieces of butter-muslin or upon small sections of white open-wove bandage—lint is too thick and too heating—and the spread pieces applied like a plaster. Over this is placed the thinnest possible layer of wool and a bandage of light material. This dressing is changed twice in the 24 hours, and at each change the old paste is very gently wiped off with olive oil before applying a fresh piece of spread muslin. It is convenient to keep a number of pieces ready spread in a tin box so that they are at hand when the dressing is changed. For extensive eczemas, or where the eczema is in positions as the face, the buttocks, or the back, this method can be only conveniently employed if the patient is kept in bed; but for eczema on the limbs or hands it may be used while the patient is getting about. It is of importance that the treatment should not be relaxed until the affected areas are completely well, or scratching or other irritation will soon bring it back. When progress is slow, in spite of careful protection in this way, more rapid improvement may be brought about by the addition of lenigallol to the paste or by the use of White's tar ointment. The prescription for the lenigallol paste would be: Lenigallol, gr. 10–20; zinci oxidi, dr. 2; pulv. amyli, dr. 2; vaseline, oz. ½. For the tar ointment: Crude coal-tar, dr. 1; oxide of zinc, dr. 1 (mix together and add starch powder, oz. 1, vaseline, oz. 1, previously mixed). Each of these should be employed in the same manner as the zinc and starch paste.

Obstinate Cases.—In some cases of obstinate eczema, especially in the infantile eczema, in chronic eczema in children, and in the patchy eczema in adults, rapid improvement may be obtained by the use of a tar paint, as follows: Crude coal-tar, oz. 1; collodion, oz. 1; acetone, oz. 1. The tar paint is applied with a brush and allowed to dry on and the painting repeated every two or three days. In some cases of chronic eczema between the more acute attacks it will be found useful to apply without any bandaging a zinc and starch paste, or a zinc ointment (dr. 1 of zinc oxide to oz. 1 of vaseline), with the addition to either of small quantities of one or other of the following drugs, or with a combination of two or more: Oleum cadini, min. 5 to oz. 1 of ointment or paste; acid. salicyl., gr. 5; acid. pyrogallic, gr. 1–2; chrysarobin, gr. 1–5 to the ounce.

Still another local application of the protective type which suits some cases of chronic eczema is a zinc cream made, not in the usual way with olive oil, but with linseed oil, thus: Zinci oxidi, dr. ½; olei lini, oz. 1; aq. calcis, oz. 1. This forms a flexible protective coating which is not greasy and need not be removed at each fresh application.

X Rays.

In spite of diligent endeavours to cure a chronic eczema by one or other of these measures we may fail to eradicate the disease and to prevent fresh outbreaks. The use of the term "chronic eczema" is in itself an indication of the difficulty experienced in curing these cases. But fortunately we have now another resource, the use of X rays. X ray treatment may be employed in all forms of eczema, and in chronic eczemas it is often invaluable. It is used with perfect safety provided the dosage is correct. In the treatment of eczema the best results are obtained with small doses, but even these must be carefully measured and, above all, carefully spaced in point of time, so that we do not get an overdose by an accumulation of small doses. The most generally useful dose for the treatment of eczema is one-third of a full dose, a full dose meaning the largest dose that may be given without subsequent damage to the skin. This corresponds with the depilation dose used in the treatment of ringworm of the scalp and with the B tint of the Sabouraud pastille. If fractions of the full dose are being given they are ordered as 1/5 B Sabouraud or 1/4 B, 1/3 B, 1/2 B, 2/3 B, 4/5 B, 5/6 B, and 1 B for the full dose. The important rule is that a full dose must not be repeated in less than one month, and that in the course of one month a greater number of fractions than will produce one full dose should not be given. A 1/5 B dose may with safety be repeated at intervals of seven days, a 1/3 B dose at intervals of ten days, a 1/2 B dose at intervals of two weeks, and these doses may be continued at these or longer intervals as long as required. If the intervals between the doses are diminished 1/5 B doses should not be repeated more than five times, 1/3 B more than three times, 1/2 B more than twice, that is not after one full dose has been administered.

In treating a chronic eczema by X rays each of the affected areas may be given a dose of 1/3 B. If this, after a few days or a week, effects great improvement, as it generally does, a further dose of 1/3 B may be postponed for several weeks or longer. Where there is much infiltration and thickening the 1/3 B dose may be repeated at intervals of ten days. In some cases it will be found that better results are obtained by giving a series of 1/5 B doses at intervals of from one to three days until a maximum of five 1/5 doses have been given. But then an interval of a month must be allowed before giving any more. It may happen in obstinate, though perhaps not very pronounced, chronic eczemas that the eruption will be cleared up by a single application of 1/3 B. Among hospital patients X ray applications are of particular value in chronic occupational eczemas of the hands. It is even possible in many instances to cure the eczema while the patient is still following his occupation by means of properly spaced applications of small doses of X rays over considerable periods.

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Special Articles.

ON THE INTER-RELATIONS OF ALASTRIM OR PARA-SMALLPOX, VARIOLA, AND VACCINIA

FROM THE CLINICAL STANDPOINT.

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AN infectious disease has been prevalent in this country for several years of which the diagnosis still gives rise to dispute. The disease certainly belongs to the class of infections of which small-pox is the most important member, and the majority of observers will, I believe, acknowledge that the origin of the dispute is found in the facts that the disease in question is not only very obviously a close relation of small-pox (more closely related to small-pox than is varicella, for example), but also in many of its examples resembles small-pox so closely in clinical features that differentiation from small-pox at the bedside presents very great if not insuperable difficulty.

For these reasons opinion is divided. On the one hand, it is maintained that the disease in question has no features which are inconsistent with small-pox in many of its mild and discrete examples. On the other hand, there are observers who point to the low grade of severity of the disease, a feature which carries with it naturally a very low case mortality, or in some outbreaks a complete absence of fatality, and also to the persistence of this epidemic characteristic throughout lengthy periods of observation. These observers maintain that this feature, and particularly the established fact that it persists for long periods of observation, is sufficient in itself, and in spite of the clinical resemblance to small-pox, to mark off the disease in question from small-pox as formerly understood in this country. In consequence of this opinion they consider that it is now expedient, for the purpose of scientific accuracy, to adopt a special name for the disease which will indicate the relationship to small-pox as well as the divergence from that disease, and there are some who advocate a relaxation of the administrative measures now applied to the disease in question, in order to make the procedure less rigid than the procedure which follows the occurrence of small-pox.

It is necessary to state for the sake of clearness that there are some observers who are of opinion that the clinical features of the disease in question *can* be distinguished from those of small-pox, but it will be evident by reference to most of the many descriptions of the disease which have been published, that there is no single clinical feature which is common to all cases of the disease in question, and also is not found in many of the cases of acknowledged small-pox of mild and discrete type. By acknowledged small-pox is meant cases of that disease which are of mild and discrete type, and give rise to or occur in sequence of transmission from cases which are "classical" in their onset, in their course, and in their severity. It is also important to note that if attention is concentrated on the purely objective features of the disease in question—that is to say, on the features which are recognised by the medical attendant as the direct result of his personal inspection, to the exclusion of the subjective features of the attack, that is to say, the history of his illness in its onset and course as supplied by the patient and his friends—it will be found that the difficulty of differentiating the disease from mild and discrete small-pox is enhanced to a very remarkable degree.

It may therefore be stated that we are concerned with an epidemic disease which resembles acknowledged small-pox very closely, in fact so closely that many of its examples cannot be separated from small-pox at the bedside; but as time goes on and generation after generation of cases come under observation, it is noted that all the cases have been and continue to be of a low grade of severity, and this epidemiological feature is considered by some observers to be inconsistent with former and present experience of the epidemic history of acknowledged small-pox.

Is it possible to explain the course of events in this country, and the peculiarity of the epidemic history of the disease in question on the assumption that the disease is small-pox and nothing else?

The Meaning and Estimation of Severity in Small-pox.

It is acknowledged that epidemics of small-pox, as of other infectious diseases, vary in severity. Variation in epidemic severity is brought about by variation in severity of attack, and means that the average severity of attack in one epidemic is greater or less than the average severity of attack in another. Severity of attack in infectious disease is determined by the interaction of several factors, of which the most important are the virulence, the toxicity, or the toxin-producing power of the infecting organism on the one hand, and on the other the degree of immunity of the individual attacked. Both factors are variable, and our knowledge of the conditions which produce variation is very imperfect. The influence of each factor on severity of attack cannot be estimated separately, but only in conjunction by the result of their interaction which is seen in the clinical phenomena of toxæmia. But since the influence of the one factor is positive and of the other negative in its effect, it is evident that the presence of toxæmia is an indication of virulence or toxicity in the infecting organism, and for practical purposes it may be assumed that severity in the clinical feature increases with increase in toxic power of the infecting agent.

Many years ago Ricketts gave his attention to the question of how the severity of an attack of small-pox may be most satisfactorily estimated for statistical purposes, and he set out the following classification which was published in the Annual Report of the Metropolitan Asylums Board for 1907 where it may be found. This classification is still in use in the metropolitan small-pox hospitals:—

1. Hæmorrhagic or toxic small-pox.
2. Small-pox confluent on the face in the papular or vesicular stage.
3. Small-pox confluent on the face at the time of maturation (sixth day of rash).
4. Discrete small-pox with more than 500 pocks on the face.
5. Discrete small-pox with more than 100, but not more than 500 pocks on the face.
6. Discrete small-pox with not more than 100 pocks on the face.

There is one defect in this classification which Ricketts recognised and stated. The defect is that there is no common denominator for all the classes. I believe that Ricketts recognised that toxic power—that is, virulence—is the most important factor in the production of severity, but rejected it as a basis for classification because it did not allow of sufficiently accurate estimation. Therefore, in his first class, which he called hæmorrhagic or toxic small-pox, in the greater part of his second class, and perhaps in a minority of his third class, severity and result of attack are associated with the primary fever of the disease—i.e., with the toxæmia of small-pox and not with the focal rash and its effects. These cases die, and they die as the direct result of the toxæmia, of which the main determining factor is the toxicity or the virulence of the infecting organism.

On the other hand, in the greater part of Rickett's third class and in his fourth, fifth, and sixth classes, severity of attack is related to the severity of the focal rash and is determined by the amount of suppuration. Since the face is the chief absorptive area, it is determined by the amount of suppuration on the face, and this is estimated by a count of the number of

lesions on the face when outcrop is completed, because enumeration of the lesions is the best available means of determining the amount of suppuration. The upper limit of severity of these cases is "confluent small-pox," early confluent in Class 2 and later confluent in Class 3, and among the latter are found those cases in which the tendency to fatality initiated by the toxæmia of the disease is made certainly effective by the toxæmia of the process of maturation. In regard to prognosis, Ricketts recognised that a pre-existing immunity might make its presence felt at any stage of the attack with a consequent improvement in expectation of life for the patient.

There is no doubt that the best clinical basis of a classification of severity of attack is severity of toxæmia, and it seems to be unnecessary to reject this basis because a very accurate measurement of toxæmia cannot be made. The majority of observers will agree that the most important contributory cause of fatality resulting from infectious disease is the toxæmia of the disease, and that this clinical condition makes itself evident in the onset and gives evidence of its strength by the nature of the onset and the effect of the onset on the patient. Using toxæmia as a basis, cases of small-pox as seen in the "classical" outbreak, may be classified as follows:—

1. Severe toxic with death before the focal rash has erupted fully.
2. Severe toxic continuing without intermission followed by a confluent focal rash and death in the early stage of that rash.
3. Severe toxic with intermission followed by a confluent focal rash and death in the late stages of that rash or recovery after severe fever of maturation.
4. Moderate toxic with intermission followed by discrete focal rash and slight fever of maturation.
5. Mild toxic with intermission followed by very discrete focal rash and no fever of maturation.

It is to be noted that the presence of a degree of immunity may bring about the transference of cases which are apparently candidates for the second class to the third class or even to the fourth or fifth class. These transferences are commonplaces among any series of cases of acknowledged small-pox. It is also matter of experience that the more severe is the onset, the primary fever, the toxæmia, by whatever name the condition may be described, the more apt is the succeeding focal rash to be severe, and it may be accepted that fulminant small-pox—that is to say, the attack which exhibits in the severity of the pain, in the complete prostration of the patient, and in its widespread purpuric rash, the most evident signs of a severe toxæmia—would have produced, if death had not supervened, a focal rash which would have become completely confluent before vesiculation was fully established. It may also be accepted that the mild onset, the mild primary fever, the mild toxæmia is not followed by a severe focal rash. In such a case it may happen that the focal rash, by the number of its units in the very early stage, gives promise of considerable severity. But experience shows that this promise is not fulfilled on account perhaps of early resolution of a proportion of the units or by the later intervention of the effect of the presence of a degree of immunity against the disease.

Death *from small-pox*—that is to say, death due to the toxæmia of the disease—supervenes in the cases in Class 1 and in those in Class 2. Toxæmia is not the prime cause of fatality in the cases falling in Class 3 or in Classes 4 and 5. If the primary fever, or as I should prefer to say the signs of toxæmia, remit and more notably, of course, if they intermit, the expectation of life for the patient takes a steep upward trend, although he may succumb later in his illness to the overwhelming effects of a focal rash which has become confluent in the process of maturation. Death in this type of case is to be regarded as death from a sequela of the disease rather than death from the disease itself, as Ricketts has pointed out. It follows that the outbreak of small-pox from which the type of case belonging to Classes 1 and 2, and also a proportion of the cases falling in Class 3, are removed, will have no case-mortality directly attributable to the disease, and that the case-mortality in such an outbreak will be low and mainly due to accidental individual conditions. It is the cases in these classes which show the clinical evidence of high toxicity of the infecting organism. There seems to be no reason to demand that this evidence of high toxicity should invariably be shown by the organism of small-pox. Long-continued mild infection is recognised to be a feature of other forms of infectious disease. Nor does there seem to be any reason to doubt that the removal of toxicity from the infecting agent may reach a point where fatality from the disease ceases.

The Relation of Vaccinia to Small-pox.

The great majority of observers are agreed that the disease in question and vaccinia are mutually protective. Vaccinia and acknowledged small-pox are also mutually protective. Therefore the disease in question and small-pox stand in identical immunological relationship with vaccinia.

Vaccinia is an inoculated disease of which the "matter" is derived from the pustules of acknowledged small-pox. It is unnecessary to enter fully into the methods of attenuation of the virus which are used in the manufacture of the anti-smallpox vaccine. It is sufficient to note that the result of the process is an undoubted attenuation of the virus, and that this attenuation, once it has been established, cannot be removed by any artificial means at present available. That is to say, the anti-smallpox vaccine cannot by any artificial means be sufficiently enhanced in virulence to enable it to give rise to an attack of inoculated small-pox. The occasional cases which are described as generalised vaccinia may be discounted in this argument on account of their very great rarity. Even in former days when arm-to-arm vaccination was the practice, it was found that repeated transmission tended towards further attenuation and not towards enhanced virulence. It is not outside the bounds of possibility that a similar attenuation in the virus of small-pox may occur by natural processes, that this natural attenuation may not reach the high degree attained by artificial means in the manufacture of anti-smallpox vaccine—that is to say, that natural attenuation may go only so far as a reduction in the power of the virus to produce a septicæmic infection and not so far as the complete removal of that power which is brought about in the laboratory; and as in the case of anti-smallpox vaccine, that the particular strain of virus which has become naturally attenuated may fail to recover virulence. A discussion of possible reasons for this failure seems to be too speculative to be of practical value.

This assumption is consistent with the experience that the epidemic power of small-pox apparently tends to wear itself out in an affected area, a recession which seems not to be accounted for sufficiently by the immunising effects of an increased use of vaccinia. The suggestion will also explain the observed contrast between the low case-mortality in the latter period of epidemic small-pox and the high case-mortality of the rising epidemic wave, which was noted in the London outbreak of 1901–02–03. The assumption has also the support of analogy in the case of the organism of diphtheria, an organism which apparently tends to a gradual loss of virulence and of which it is stated: "there is no evidence that a totally non-virulent strain can be made to show even a slight accession of virulence by any artificial means." [1]

Therefore, (1) on account of the very close resemblance of the clinical features of the disease in question to those of mild and discrete small-pox; (2) from an analysis of the factors which contribute to the production of severity of attack in small-pox; (3) from the consideration of the immunological relations of the disease in question and of those of small-pox;

[1] Diphtheria. Medical Research Council. Chap. ix., p. 322.

and (4) from the analogy presented by the known properties and action of anti-smallpox vaccine; it seems reasonable to suggest that small-pox, produced by an attenuated virus, is sufficient to account for the peculiarity in the epidemic history of this disease and that there seems to be no need to postulate another disease of the small-pox type or of the nature of a hybrid between variola and varicella or even a sub-variety of small-pox, in order to explain the course of events in this country and the epidemiological features upon which so much emphasis has been laid by some observers.

Questions of administration are really outside the scope of this memorandum, but it is necessary to refer to them on account of the implication contained in the opinion on diagnosis which has been expressed by the observers previously referred to. The argument advanced by these observers seems to take the following line:—

Let it be granted that this disease is a very close relative of small-pox or even that it is a true small-pox produced by a strain of virus of degraded virulence, the facts remain that the incapacitating effect of the illness is very slight and the case-mortality very low, so low that on occasion it disappears completely. This mild disease has now existed in this country for several years with very little, if any, alteration in its features. But we are still employing the full weight of our heavy anti-smallpox artillery against this epidemic disease which is more nearly comparable to chicken-pox than to small-pox in the disturbance which it causes. Is it not now time, for the sake of the credit of medical science and also for the sake of a saving in public expenditure, to recognise officially the obvious difference between this epidemic disease and our old "classical" outbreak of small-pox? Is it not probable that the continued use of vaccinia in our attempts to prevent the spread of this disease will bring still further discredit on small-pox prophylaxis and render the administrative procedure which is necessary for the control of "classical" small-pox even more difficult of application than it is at present? because it has been found in several cases that vaccinia has a greater incapacitating effect than the disease against which we are using it.

From the point of view of clinical medicine which must remain the only safe basis of administrative procedure, after all has been said that can be said in favour of epidemiological distinctions, this argument is obviously unsound. From the point of view of efficient administration, no adequate reason is apparent for refraining from stating frankly that the disease in question is small-pox and nothing else, so far as our present professional knowledge goes. There is no discredit attached to an imperfect knowledge of medical science, but discredit is very apt to follow attempts to conceal our ignorance such as the invention of a new name for a condition with features so elusive that they very frequently conceal themselves completely. It is conceded that the use of anti-smallpox vaccine and the isolation of cases of the disease in question will prevent the spread of the disease just as they prevent the spread of acknowledged small-pox, and notwithstanding the severe result which may occasionally follow the inoculation of vaccinia, it must not be forgotten that vaccinia is not a transmissible disease. In suggesting a relaxation of procedure, no allowance is made for the admitted and grave possibility of the coexistence of a virulent strain of small-pox with this strain of degraded virulence, or for the possible importation during the prevalence of this mild disease, of a strain of high toxicity of which the first results to be observed may be cases of a very mild type. If it is assumed that a natural attenuation of virus will continue unimpaired under all conditions, the assumption is too dangerous for use as a basis of administrative action. We are ignorant of the conditions which brought about the attenuation and we are equally ignorant of the conditions which may reinforce virulence. There is one important administrative question to which no answer seems to be forthcoming from any of the supporters of relaxation of procedure. What is the grade of severity or what is the upper limit of case-mortality which will justify a relaxation of our anti-smallpox procedure in dealing with this disease? What is the grade of severity or what is the figure of case-mortality beyond which relaxation should cease?

LEAGUE OF NATIONS HEALTH ORGANISATION:

A VISIT OF FOREIGN PUBLIC HEALTH OFFICIALS.

UNDER the auspices of the Health Organisation of the League of Nations a further visit to Great Britain of public health officials from different countries commenced on Monday last. This is the third occasion on which foreign officials have studied British public health services on the spot, and the following are the representatives of the various States attending the Conference:—

Denmark.—Dr. A. Metz, County M.O.H., Holbaek, Denmark.
Esthonia.—Prof. K. Schlossmann, Director of Bacteriological Laboratories, University of Tartu (Dorpat).
France.—Dr. L. M. Pilleboue, M.O.H., Department de l'Herault, France. Dr. E. Robin, M.O.H., city of Nantes, France.
Germany.—Dr. Walter Kloninger, M.O.H., Adenau, District of Coblenz, Germany. Dr. Lenz, M.O.H., District Bartenstein, East Prussia, Germany.
Greece.—Dr. T. Katsoyannis, Director, Section of Infectious Diseases, Ministry of Health, Athens, Greece.
Holland.—Dr. M. D. Horst, M.O.H., city of Leyden, Holland.
Italy.—Dr. G. Hoffer, Port M.O.H., Venice, Italy.
Jugo-Slavia.—Dr. M. Jakovljevitch, District M.O.H., Djevejelija, Serbia.
Norway.—Dr. Ivar Tosti, Asst. M.O.H., city of Oslo, Norway.
Poland.—Dr. Jan Bogdanovicz, M.O. (M. and C.W.), Ministry of Labour, Warsaw, Poland.
Russia.—Dr. E. Braguine, M.O., Ministry of Health, Moscow, Russia.
United States of America.—Dr. S. L. Christian, U.S.A. Public Health Service.
Canada.—Dr. Wodehouse, Secretary, National Tuberculosis Association of Canada.

The party was received by the Society of Medical Officers of Health, words of welcome being spoken by Prof. H. R. Kenwood and Lieut.-Col. S. P. James, of the Ministry of Health. Formal presentations later took place at the Ministry of Health to Mr. Neville Chamberlain, after which Sir George Newman addressed the party on English public health administration. The representatives of foreign countries then divided into four groups for the study of public health administration and practice in urban and rural areas outside London, as follows:—

Group A.: Middlesex (Dr. John Tate) and Willesden (Dr. G. F. Buchan).—Dr. Pilleboue (France), Prof. Schlossmann (Esthonia), Dr. Hoffer (Italy), Dr. Braguine (Russia), Dr. Wodehouse (Canada).
Group B.: Yorks W.R. (Dr. J. R. Kaye) and Leeds (Dr. J. J. Jervis).—Dr. Christian (U.S.A.), Dr. Metz (Denmark), Dr. Tosti (Norway), Dr. Kloninger (Germany), Dr. Bogdanovicz (Poland).
Group C.: Staffordshire (Dr. W. D. Carruthers) and Wolverhampton (Dr. R. H. H. Jolly).—Dr. M. D. Horst (Holland), Dr. Robin (France), Dr. Jakovljevitch (Jugo-Slavia), Dr. Lenz (Germany), Dr. Katsoyannis (Greece).

The whole party will reassemble in London on or about March 8th, for the study of Health Schemes and Institutions in the Metropolis. On March 24th they will leave England for the closing Conference to be held at Geneva on March 25th and three following days.

These interchanges have been rendered possible by the financial assistance of the Rockefeller Foundation.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

THE PROVISION OF MEDICAL BENEFIT.

Evidence by Mr. Brock and Dr. Smith Whitaker (continued).

Formal Complaints.

(App. C. 40–49.) Each Insurance Committee is required to set up three standing subcommittees for the investigation of complaints. The Medical Service Subcommittee is the one which deals with complaints against doctors, the Pharmaceutical Service Subcommittee hears complaints against chemists, and the Joint Services Subcommittee deals with cases in which both doctors and chemists are involved. Each of these bodies is constituted on the same principles, and it is sufficient here to refer to the Medical Service Subcommittee. This has an equal number of members appointed by the representatives of insured persons and doctors respectively and a chairman appointed by the neutral members of the Committee. The procedure of this body is formal and its hearings are judicial in character. The Committee find facts and make recommendations and the Insurance Committee come to a decision on these facts. From their decision there is a right of appeal to the Minister.

(Q. 1014.) There are, of course, a good many cases which do not reach the stage of a formal complaint. These are settled at the offices of the Insurance Committee when it is merely a matter of clearing up a misunderstanding. The number of formal complaints investigated in England and Wales is roughly 1700. At a later stage in the evidence Mr. Brock gave the following particulars :—

(Q. 1307–9.) Out of a total of 1646 cases the doctor was acquitted, or the case was not substantiated, in 647, and there were 999 proved cases. Out of the 999, grant was withheld in 31½ per cent.; the doctor received a warning in 51½ per cent.; and in the remaining 17 per cent. he was required to refund to the insured person the amount that the insured person had spent in obtaining the services of another doctor.

About 40 per cent. of the complaints were, it will be seen, not justified, and of those cases (647 in number) in which the doctor was acquitted 100 were allegations of neglect, 250 of inadequate treatment, 105 of fee charging, 142 of irregular certification, and 50 of a miscellaneous nature. There is a tendency for the number of complaint cases to increase. As to this, the witness said that he did not think that this implied that the service is less satisfactory. (Q. 1018.) It really means that insured persons are much more alive to the rights which they enjoy under the Regulations; and also that for a time after the war committees naturally had to take a rather more lenient view because of the number of practitioners who were returning from military service and who suddenly found themselves accepting obligations the full extent of which they perhaps had very little opportunity of studying.

Monetary Penalties.

(App. C. 54.) The reference above to the withholding of grant means that the Minister has power to withhold part of a doctor's remuneration where the service provided has been unsatisfactory; he may do this with or without a recommendation from the Insurance Committee. Before any such sum is withheld, the doctor or chemist is afforded an opportunity of making representations orally or in writing to officers of the Ministry. The number of cases in England in recent years in which monetary penalties have been imposed on practitioners is given below :—

Year.	No. of cases.	Amount withheld.
1920	18	£583
1921	59	£855
1922	115	£2181
1923	132	£3131

The cases themselves are classified as follows :—

Neglect in treatment (failure or refusal to visit, unsatisfactory treatment, &c.)	103
Charging fees	66
Irregularities in certification	53
Failure to keep records	39
Failure to make returns where cases are sent to referees	28
Various other classes	35

The amounts of grant withheld usually vary from £1 to £100. In five cases the amounts have been higher and in one of these £1000 was withheld.

The £1000 Case.

This case, which appears from the evidence to be quite an isolated case, occurred in 1923 and has attracted a good deal of comment in the general as well as the medical press. (Q. 1022.) It concerned a firm of two practitioners practising in a self-contained area. It was a fairly large village sufficiently far from the nearest town to make it difficult for any other doctors to practise in that district. Both these practitioners had been making a charge to their insured patients expressed as a charge for the bottle of medicine, but in fact, according to the local custom, it was a charge which also covered treatment. This had gone on for a considerable time. The Insurance Committee made representations for the removal of the practitioners from the panel. A Committee of Inquiry reported to the Minister, who, said the official witness—

> while he took the view that the facts established would be quite sufficient to justify the removal of those two doctors from the Medical List, also felt that there were special circumstances that would warrant him in imposing a less grave penalty. I think he was principally influenced by the fact that if those two practitioners had been removed, there were no other doctors practising in the area who could have undertaken the care of their insured patients. . . . In ordinary circumstances where a breach of the doctor's contract is so grave as to justify a penalty of anything like that sum it has been generally felt that the proper way to deal with it is by removal from the list and not by the imposition of anything in the nature of a fine. It was only the very special local circumstances of this case which led the Minister to deal with it differently.

Learning by Experience.

(Q. 1202, 1203.) The witnesses were asked whether it was not necessary for doctors to know a great deal about the machinery of the Act. They replied that some doctors learn it and some do not. Those who do learn usually learn by experience as members of Panel Committees or by the experience they have had as defendants in cases in which there are complaints.

As to young doctors coming on the panel for the first time, it was thought that the best way of becoming acquainted with the Regulations would be for a man to go as an assistant to a general practitioner and get actual experience of practice. It was suggested by a member of the Commission that a short course of lectures on the machinery of the Act might be a useful preparation to panel practice, but the witnesses seemed to entertain doubts as to the value of this proposal.

Depreciating the Panel Service.

(Q. 1275.) In some cases insured persons deliberately ask to be treated as private patients.

> Q. Can you suggest any reason why an insured person who is already paying a doctor should ask that same doctor to treat him or her as a private patient?—A. I think it is partly the result of the unfortunate speeches of some people rather prominent in the Friendly Society world who repeatedly depreciate the insurance medical service. That is bound to create an impression in the minds of some insured people that if they come as private patients they may in some way or other be better treated.

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3). References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

(Q. 1234–7.) As to differences in waiting-room accommodation for insured and private patients, the witnesses said there was no evidence of such cases. There may be one place of waiting for the well-to-do and another for those who are not so well off, but not a distinction between insured as such and non-insured as such.

Removal from the Panel.

(App. C. 56.) The removal of a doctor from the panel is usually preceded by representations from the Insurance Committee that his continuance on the panel would be prejudicial to the efficiency of the Insurance service. The case is then investigated by an Inquiry Committee appointed by the Minister, consisting of a barrister or solicitor as chairman and two doctors, who hold a public inquiry and report to the Minister their findings of fact and inferences. The Minister then decides in the light of their report whether the name of the doctor is to be removed from the list or not. A doctor, it appears, may terminate his agreement by giving the prescribed notice at any time, but the action of the Insurance Committee in this respect is limited to securing by means of representations made to the Minister that an inquiry shall be held with a view to the removal of the practitioner from the list. (Q. 1024.) In England and Wales 32 doctors have been removed since the Acts came into operation and in addition eight have been allowed to resign to avoid removal, so that in effect 40 have been removed. (Q. 1029.) This does not include those persons who, having been removed from the Medical Register by the General Medical Council, have been automatically taken off the panel.

The following questions were asked as regards reinstatement :—

(Q. 1025, 1026.) What is the position of a doctor when he has been removed from the panel? Can he ever get back again?—A. Yes, it is open to him at any time to apply for restoration. Q. Must he apply formally?—A. He must apply formally, and before a decision is reached it is usual to consult the Insurance Committee and the Panel Committee of the district in which he previously practised. He would also be required to produce evidence as to his conduct in the meantime from medical men in the area in which he had been working.

With regard to criticism of the power of the Minister to remove doctors from the list, the witnesses said :—

(Q. 1033.) We have gone into that on several occasions in discussion with the Insurance Acts Committee of the British Medical Association, and the root of the matter, as they recognised frankly the last time we went into it with them, is the statutory provision.... The criticism, carefully analysed, has always turned out to be a criticism of the statutory provision which gave the Minister power to remove a man. It has been contended by some doctors that such a matter should be dealt with by the General Medical Council, or that there should be some machinery for referring the matter to the High Court. But we have always had to answer that that is a question of legislation.

Asked whether the service could be administered on the lines on which it has been established without such a controlling power, the witnesses said :—

(Q. 1034.) The only method of getting rid of a doctor who is not working satisfactorily is the power of the Minister to remove.... We have to recognise that the criterion of the Act in this respect is not like that of the Medical Act, removal on the ground of infamous conduct in a professional respect, or anything of the kind. The power of the Minister to remove depends on his being satisfied that the practitioner's conduct is prejudicial to the efficiency of the service, so that the power is essentially one for controlling the proper standard of the service. It is difficult to see how a power of that kind could be exercised satisfactorily except by someone responsible to Parliament, which, of course, would not apply to the General Medical Council or to the High Court.

The commonest causes for removal from the panel have been persistent or very gross negligence. Another cause has been drunkenness, and then there have been two or three cases in which a practitioner was quite intractable; he would not carry out any of the Regulations, some, perhaps, not important in themselves, but without which the system could not be carried on. But the majority of cases have been for negligence in treatment.

(To be continued.)

INFECTIOUS DISEASES ABROAD.

Acute Poliomyelitis.—New Zealand is at present experiencing a sharp outbreak of this disease. The weekly notifications began to increase during December, 1924. The number of cases notified in the first week of January this year was 19, in the second week 30, in the third week 60, in the fourth week 58, and in the week ending Feb. 2nd 88. A report from Wellington, dated Jan. 16th, states that the Health Department has prohibited the attendance of all children under 16 years of age at schools, theatres, cinemas, and other public places throughout the North Island. In all other countries the few outbreaks which were reported during 1924 subsided before the end of the year. They included a very severe outbreak in Iceland with an incidence of about two cases per 1000 inhabitants and a case-fatality, in cases showing definite paralysis, of 37 per cent. Elsewhere the chief outbreaks reported during 1924 were, as usual, in Scandinavia, Great Britain, and the United States. The following statement, which gives the available notifications from certain countries during the last two years, shows that in most of them the disease was more prevalent in 1924 than in the previous year. No reported outbreak, however, was comparable in extent and severity with the epidemics of 1911, 1912, and 1916.

	Cases.	
	1923.	1924.
Sweden	313	685
Denmark	75	152*
Finland	47	51
France	175	216*
England and Wales	587	760
Switzerland	256	108
United States (27 States) ..	2458	3000†
Australia	137	227*

* To Nov. 30th. † Approximate cases to Dec. 6th.

Influenza.—In the statistics available from various foreign countries and cities for the month of January this year there is no indication of a recrudescence of influenza on the continent of Europe corresponding to that which is now affecting certain areas in Great Britain. The deaths notified as being due to influenza during the first three weeks of January in Paris, Antwerp, Stockholm, Copenhagen, and Amsterdam were fewer than those notified during the same period of last year.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Scottish Courts and a Medical Report.

MANY people may think that a mountain has grown out of a molehill in the discussions held recently in the courts in Scotland with reference to a medical report upon an injured workman in connexion with a claim under the Workmen's Compensation Acts. Neither party was in doubt about the accident, nor about the original injuries, nor about the liability of the employers, all of which were admitted, and compensation was paid for two years on the basis of total incapacity. Then the employers—or those behind them—presented the view that the workman was all right again and fit for his ordinary duty, and as the workman denied this they claimed a reference to a medical referee. An essential step towards such reference is that the employers shall present a medical report from their own doctor, and until that is presented the reference to a medical referee will not be ordered, and so the compensation

must continue to be paid. The employers had all this fully in view, and therefore when they applied in the county court for a remit to the medical referee they tabled their own medical report. It is over this report that the fight has been waged, and in the Court of Appeal in Scotland, by a majority, the decision was given that what the employers' doctor wrote cannot be received as a medical report, and therefore the employers' application is thrown out. This judgment reverses the decisions of the registrar of the county court and of the county court judge, and, as has been said, there was a dissenting opinion in the Court of Appeal.

The report was in the following terms: "Having examined A.B. on 11th October, 1924, I certify him as fit for work, and the reason for my opinion is, had he begun light work when told to, he would now be fit for full work." Whatever may be said against this document it certainly has the cardinal virtue of brevity. Nothing could be more concise. Apparently, however, the doctor has fallen between two stools, and has come to grief on the dilemma of too great and too little compression. If it may be premised that in the opening clause of the report "work" means "full work," then, so taking it, what is said against the report in substance comes to this, that, on the one hand, the first clause certifies that the man is fit for full work, and, on the other hand, the remainder of the report certifies exactly the contrary, because—so the argument proceeds—it says that he *would* now be fit for full work *if* he had done something which he did not do, which appears to imply, or definitely to assert and certify, that the man is *not* fit for full work. But of course there is another view—namely, that the opening clause does not refer to full work, but to light work, which would lead to diminution of the compensation and not its total stoppage. But this middle view found no judicial support. On the contrary, the dissenting judge thought that, although the language was lacking in lucidity, "there is not the slightest doubt as to what the doctor really meant"—namely, that, whether the man is now able for full work, or for light work, or for no work, his condition, whatever it may be, is no longer due to the accident, but arises from his not undertaking light work at the time when he was told to do so. This is certainly a good deal to be read into, or out of, the report. There is much to be said for the dissenting judge's view that it is extremely to be regretted that such technical questions under the Workmen's Compensation Acts should be brought before the Supreme Courts. Meantime it may be useful to note, what, of course, everyone knows already, that "such a report should be clear and consistent; it should be its own interpreter."

Royal Medical Society of Edinburgh: Annual Dinner.

The annual dinner of the Society was held in the hall of the Royal College of Physicians of Edinburgh on Feb. 5th. Dr. T. Drummond Shiels, M.P., presided over a company numbering about 120. The guest of the evening was Mr. Alexander Miles, and among those present were: Lord Provost Sir William Sleigh, Prof. G. Lovell Gulland, President of the Royal College of Physicians; Sir Harold Stiles, President of the Royal College of Surgeons, Sir Robert Philip, the Hon. Lord Constable, the Very Rev. Prof. Paterson, D.D.; and Surgeon Commander P. L. Crosbie, R.N. Mr. Miles, proposing the toast of "The Royal Medical Society of Edinburgh," said that it was, and always had been, a students' society. It was well authenticated, he continued, that the Society was founded in August, 1734, about 190 years ago, and that it was the oldest medical society in the Kingdom. Describing the formation of the Society, Mr. Miles said that six students, after spending a social evening together in a tavern, agreed to meet once a fortnight in their respective lodgings, where it was arranged that a dissertation in English or in Latin on some medical subject should be read by one of them and discussed by the others. The band of six was soon joined by one whom they were always proud to count among the founders of the society—no less than the celebrated William Cullen—and he, perhaps more than any man, served to make the foundations sure. They must keep in mind that at the time the society was founded medical opinion was in a state of flux. Medical practice had for long been based on the doctrines of speculative philosophers, of whom Boerhaave, of Leyden, was the chief apostle. But a school was arising, directed by Hoffmann, which sought to replace these abstract theories by knowledge based upon observed facts. Cullen was one of the leaders of this school, and there is no doubt he exerted a powerful influence upon his fellow-members, stimulating them to think and to observe for themselves, and to question on every point the voice of authority. It was well recognised, he said, by medical historians that it was mainly through the influence of the Edinburgh school that the doctrines of Hoffmann and the method of the experimental system came to dominate. The Society after three years having found its feet, the members resolved to form themselves into a definitely constituted body, and they drew up a constitution and adopted the name of the Medical Society in 1737. In 1778 it became incorporated under Royal Charter, and the Society now had one of the finest medical libraries in the country, containing well over 30,000 volumes.

The membership of the Society embraced the names of men who had made medical history in this country for nearly two centuries. Among the most distinguished members, in medicine, he mentioned Andrew Duncan, Richard Bright, Marshall Hall, Robert Christison, Douglas Maclagan, and Byrom Bramwell. In surgery there were the Bells, Robert Liston, William Fergusson, James Syme, and the greatest of all, Joseph Lister; and in obstetrics, James Young Simpson, A. R. Simpson, and Halliday Croom. A great many of their members had also become distinguished outside of medicine. There were Mark Akenside, the poet; Oliver Goldsmith; Mungo Park, the explorer; Sir Henry Holland, the traveller; Sir Gilbert Blane, who introduced lime-juice into the Navy; Sir Charles Hastings, the founder of the British Medical Association; Robert Finlay; Thomas Addis Emmet, the Irish patriot; and Charles Darwin.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Candidates for Dail Eireann.

WITHIN the next few weeks bye-elections will take place in no less than nine constituencies in the Irish Free State. In two of these the candidate for the Government Party will be a medical man. In Co. Cavan Dr. J. J. O'Reilly has been selected, and will be opposed by a Republican and a representative of the Farmers' Party. For the South City Division of Dublin, the Government candidate is Mr. Thomas Hennessy, F.R.C.S.I., who will be opposed by a Republican and a Labour candidate. The Government Party could not have selected a candidate more acceptable to the profession than Dr. Hennessy. He is thoroughly familiar with medical problems and with all questions affecting the health of the country. He has, moreover, a personality and character which have gained him the trust of everyone who has had dealings with him. The South City Division of Dublin has a large number of resident medical practitioners, and a strong medical committee is being formed to assist Dr. Hennessy's candidature. Medical voters will be asked to sink political differences for the moment so as to ensure the return of a representative medical man.

Public Health Administration.

In the Senate recently Mr. P. Kenny, a Senator who always shows an informed interest in health affairs, proposed an amendment to the Local Government Bill, to the effect that a public health council should be set up to advise the Minister, the constitution of the council to be: Eight persons representing boards of health, four representing councils of county boroughs, two representing persons insured under the National Health Insurance Acts, three medical practitioners, one dentist, one veterinary surgeon, two representatives of registered nurses, and two representatives of midwives. They should all be appointed by the Minister, who should be *ex officio* a member of the council. The amendment also provided for payment of travelling expenses, subsistence allowance, and reasonable compensation for loss of remunerative time. The amendment was supported by Mr. O'Farrell, a Labour Senator, who pointed out that in questions of sanitation, and measures for the prevention of disease, Ireland was much behind most progressive countries. Opposition came from the Minister on the ground that such a council would interfere with direct Ministerial responsibility to Parliament. On a division the amendment was defeated by 23 votes to 10. Mr. Kenny left himself open to criticism on the ground of the unwieldy constitution of his proposed council. A body supposed to represent expert sanitary opinion, on which nurses and midwives have a larger representation than medical practitioners, is not easy to defend. That some such council, however, if properly constituted, would be of service to the health of Ireland under present conditions can hardly be doubted.

Housing Conditions in Dublin.

Dr. Brian Crichton gave an address recently to the Dublin Rotary Club dealing with the effect of the housing conditions in Dublin on infant life and health. He pointed out that whereas 50 persons per acre was a normal distribution of a city population, in one ward in Dublin there were 130 per acre, and in another 117 per acre. The death-rate of children in Dublin was nearly double that of London. He mentioned also the difficulty of obtaining pure food for children, and stated that the penalties imposed for selling dirty or impure milk were quite inadequate. Little has been done in the past ten years to improve housing conditions in Dublin, and even ten years ago they constituted a grave danger to the public health. President Cosgrave made the announcement a few days ago that in Dublin in the past few year 940 houses had been erected, or were in course of erection, presumably by Government or with Government help. But this number, useful as it is, can hardly make up for those that have become uninhabitable by the lapse of time, and the general housing accommodation will be even worse than it was ten years ago. It is true that something is being done also by private initiative, and the Rev. D. H. Hall, a clergyman of a poor parish who has done much to promote housing for the poor, recently announced that he had been offered £250,000 at 2 per cent. for his housing scheme, provided certain conditions were fulfilled.

Medical Referees to the National Health Insurance Commission.

The medical referees appointed to act under the National Health Insurance Commission are Drs. J. J. A. Gannon, F.R.C.P.I., P. Magner, and J. A. Cusack. The Commission has issued to medical certifiers a brief pamphlet explaining the duties of the referees. Their services are at the disposal both of medical certifiers and of approved societies. A medical certifier who is in doubt as to the continued incapacity of an insured person whom he has hitherto certified as incapable of work, can make application for the opinion of a referee. The opinion of the latter will be communicated both to the certifier and to the approved society. Similarly, an approved society in doubt as to the incapacity of a member who is in receipt of sickness or disablement benefit may refer the member for examination to a medical referee. It will also be open to approved societies to refer an insured person admittedly incapable of work who has been in receipt of sickness or disablement benefit for a prolonged period, and in regard to whom the society thinks it desirable that a second medical opinion should be obtained. The function of the referee is to be purely advisory, and neither the certifier nor the society will be bound by the opinion of the referee. The Free State has been apportioned into three districts, in regard to each of which a referee will function. Ordinarily, the insured person will attend for examination at a fixed centre, but in exceptional circumstances an insured person may be examined at his own home.

Royal College of Physicians of Ireland: Honorary Fellowship Conferred on Sir Humphry Rolleston.

On Feb. 7th Sir Humphry Rolleston, President of the Royal College of Physicians of London, was admitted to the Honorary Fellowship of the Royal College of Physicians of Ireland. The President, Sir William Thompson, was in the chair and handed the new Fellow his certificate. Sir Humphry Rolleston then gave an address on "Individual Links Between the Colleges of London and Ireland." He stated that in the 80 years from 1836 to 1916 no less than 28 Fellows of the London College had been admitted to the Fellowship of the Irish College. He referred to several physicians who had associations with both Colleges, among others, Sir William Petty, Sir Edward Barry, Anthony Pelham, and Thomas Brooke. A vote of thanks to Sir Humphry Rolleston was proposed by Dr. Walter Smith, Senior Fellow of the College, and seconded by Sir John Moore. In the evening Sir Humphry Rolleston was present at a Term Dinner of the College.

Fellowships in Sanitary Science.

When the Local Government Bill, at present before the Oireachthas, becomes law, it will be the duty of the county board of health in each county to appoint a medical officer of health. As up to the present there is almost no expert sanitary work done in Ireland, there will be a difficulty in finding trained and suitable candidates. It is satisfactory, therefore, to find that some help is to be given by the Rockefeller Foundation. An official statement just issued by the Department of Local Government and Public Health states that:—

> The Department recognises the difficulty that will arise in finding suitable persons to fill the important position of medical officer of health in each county. A number of doctors possess diplomas in sanitary science, public health, and State medicine, but have no opportunity of obtaining experience in general public health administration. The Minister and staff discussed this difficulty with the representatives of the Rockefeller Foundation. Three travelling Fellowships have, therefore, been offered, and when the Bill becomes law opportunity will be given to all qualified persons to submit their names. A committee consisting of medical experts and others to select for fellowship the best qualified and most suitable persons from amongst the applicants will then be set up.

It is further stated that the Fellowships will entail a sojourn in the United States of about eight months. Besides full travelling expenses, the Foundation will pay matriculation, instruction, and other university fees, and a payment monthly is also provided for, while full opportunity for study will be provided at hospitals, laboratories, and specialised institutions. Preference will be given to applicants under 35 years of age. The Fellows must bind themselves to accept appointments as county medical officers of health on their return to Ireland. The assistance given thus by the Rockefeller Foundation will be valuable, but a guarantee of adequate remuneration for the county medical officer of health is necessary if good candidates are to be attracted.

Correspondence.

"Audi alteram partem."

SMALL-POX OR "PARA-SMALLPOX."

To the Editor of THE LANCET.

SIR,—Dr. R. P. Garrow's able and interesting article in THE LANCET of Jan. 31st raises an issue of the greatest practical importance. He contends (with Prof. Jorge) that the ultra-mild small-pox which has prevailed in this country during the last few years is not true small-pox but a separate and distinct disease closely allied to it. If this contention is right our whole administrative machinery for dealing with this disease, which is based on the belief that it is true small-pox, would need to be radically revised. To continue to take the elaborate and costly precautions which we are at present taking would be unnecessary, and, indeed, unjustifiable. It is therefore necessary to scrutinise Dr. Garrow's arguments closely.

At the outset it must be admitted that there is nothing inherently impossible in his proposition. The remarkable constancy with which the present strain of small-pox in this country (or of "alastrim" or "amaas" abroad) maintains its abnormally low virulence and continues to "breed true" lends colour to it. Mere diminution in virulence, however, is hardly sufficient in itself to justify us in postulating a new species of disease, though if such altered virulence prove to be permanent we may, I think, claim that we are at least dealing with a new variety. Dr. Garrow, however, contends that there are definite clinical differences between small-pox and "para-smallpox," which he describes in detail. Here, I think, he goes rather further than the facts justify. What he really does is to draw a picture of the milder example of his "para-smallpox" and compare it with the classical description of small-pox as given in text-books. Of course, the two pictures are very different. It is unfortunate that Dr. Garrow's experience of small-pox other than "para-smallpox" has been, as he himself admits, rather limited. Otherwise I think he would have realised that the text-book pictures of the disease are taken from well-marked and severe cases in order to emphasise the salient features, and hence tend to be overdrawn. Let me take some of Dr. Garrow's points of difference seriatim.

1. *Onset.*—This, he says, in "para-smallpox," is "gradual," whereas in classical small-pox, of course, it is sudden. Personally, I cannot agree that it is gradual, but as the term is purely relative, and there are no means of measuring it, it is not much good discussing it. Then he says that no case in his series gave the classical onset of small-pox with rigor, vomiting, lumbo-sacral pain, and rapid prostration. Yet he admits that some of his cases had shivering, nausea, vomiting, abdominal pain, and backache. Although not prostrated, the "para-smallpox" patient, he tells us, usually "lies down." I suggest that in "para-smallpox" the prodromal symptoms are not infrequently quite as severe as in undoubted small-pox. The following are taken from notes made by me personally amongst the first 14 cases I investigated at Gloucester.

CASE 4.—Aged 23. Very severe pain in back and head; vomiting; stayed in bed three days.

CASE 7.—Aged 19. Pains in back and head, "terribly sick." Eruption on sixth day.

CASE 8.—Aged 18. Pain in back; nausea, very feverish; stayed in bed three days. Eruption on fifth day.

CASE 10.—Aged 11. Very ill for one night. Delirious; vomiting. In bed for three days. Eruption extremely scanty—less than six spots altogether—appeared on seventh day.

CASE 12.—Aged 12. Headache, backache, vomiting, light-headed; in bed for two days. Eruption on third day.

CASE 14.—Aged 21. Slight backache; retching; in bed on and off for nearly a week. Eruption on eighth day (later notes, when seen in hospital). Eruption profuse, coherent on face, thick; discrete on arms; very large pustules.

2. *The Pause.*—The feature of "para-smallpox" on which Dr. Garrow lays most stress is that which he calls "the pause"—i.e., the interval between the cessation of the prodromal symptoms and the appearance of the eruption. I admit that the occurrence of this interval was a feature which struck me in the Gloucester cases, and it is a point which must be taken into consideration. This pause arises owing to the delay which occurs in the appearance of the eruption and the consequent drawing out of the prodromal period. This is shown by the figures given by Dr. Garrow. My own figures for Gloucester cases may be worth quoting also. I personally investigated 144 cases at Gloucester, but in 19 cases definite dates could not be obtained. In 15 cases no prodromal symptoms were noticed; in other words, the prodromal period was absent. Of the remaining 110 cases the eruption appeared as follows:—

Day of eruption..	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.
Number of cases..	—	11	20	29	22	21	5	2

In classical small-pox the prodromal stage is supposed only rarely to extend to five or more days. This, then, seems a definite point of distinction, *unless* it can be explained as a result of the reduced virulence.

3. *The Eruption.*—Dr. Garrow says the eruption is "not so shotty" as in classical small-pox. I wonder on what comparison Dr. Garrow bases this assertion? Nothing is so difficult to measure as the degree of shottiness. He also says that the lesions are "more rapid in their evolution through the various stages" and that the "scabs and crusts" of classical small-pox are replaced in para-smallpox by what he terms "amber beads." "Amber beads" is quite an intriguing term, certainly more attractive than "scabs and crusts," but I suggest that the modification he describes is not much more than the phenomenon referred to in classical small-pox as the process of "aborting." I would prefer to say that the eruption in "para-smallpox" tends to "abort" rather than to run its full course, but the phenomenon is not in any way specific.

4. *Secondary Fever.*—Dr. Garrow rightly states that the amount of secondary fever and constitutional disturbance in para-smallpox is usually very slight or entirely absent, though where the pustules are large and deeply seated in the skin (as they sometimes are) there is slight secondary fever. The question is, is the secondary fever less than we should expect in view of the scantiness of the eruption? I am inclined to agree that it is so. Also I have been impressed with the rarity of secondary septic infection of the skin in para-smallpox in cases where the eruption was profuse. But then, is this a specific difference or is it part of the phenomenon of lessened virulence?

5. *Other Features.*—Prodromal rashes are certainly very rare with the present strain of small-pox, but this again may be due to the lessened virulence. Eye complications are quite as bad as we should expect in view of the general benignity of "para-smallpox."

Conclusion.

In conclusion, it must be remembered that different epidemics of any disease will vary in certain minor particulars and sometimes in more important ones; also that many diseases have become modified by lapse of time or change of environment. Especially is this true of virulence and fatality. Small-pox, as it has existed in the provinces for the past few years, certainly presents a very different picture from what it did 30 years ago or even as it sometimes still does to-day. Moreover, these differences have been maintained and it has continued to breed true. The type therefore appears to have become fixed. The question is: Are we to regard it (*a*) as the same disease, or (*b*) as a separate disease, sui generis, distinguishable clinically, as Dr. Garrow contends, from small-pox on the one hand and from chicken-pox on the other?

Personally, I would reject both these views and seek a compromise. I think that Dr. Garrow goes too far. I do not regard it as a distinct disease, nor do I believe that it is possible to diagnose individual cases of the present ultra-mild small-pox from ordinary small-pox. I prefer to regard it as a sub-variety of small-pox, sufficiently distinct epidemiologically to justify some distinction in terminology.

I am not enamoured of the term "para-smallpox" because the analogy with paratyphoid is misleading. The term would, of course, have been quite justified if "para-smallpox" reacted to vaccinia differently from ordinary small-pox. Personally, I prefer the suggestion made recently in THE LANCET by Dr. R. W. Jameson, that we should use the terms variola "major" and "minor" in order to make the necessary distinction, and I could wish that the Ministry of Health would give official sanction to this, at the same time issuing a memorandum indicating the modifications in administrative procedure which they would approve in epidemics which were found to be only variola minor.

I am, Sir, yours faithfully,

Leicester, Feb. 4th, 1925. C. KILLICK MILLARD.

SMALL-POX AND ALASTRIM, VARIOLA MAJOR AND MINOR.

To the Editor of THE LANCET.

SIR,—Your correspondents for the most part seem to concentrate on the individual case to the exclusion of the general view of an epidemic as a whole, and so doing, lose the view of the wood because of the trees.

The small-pox epidemics of 1897 and 1923 at Gloucester were so different that a large section of the public there considered them distinct diseases. The council committee responsible for small-pox expenditure, though they were only fulfilling the behests of Government, lost their seats at the next election.

The official inability to distinguish between variola major and minor, both of which bred true, is a serious matter; for disregard of the present advice leads to nothing with variola minor, but should variola major later break out in the same place, it might well spread to a considerable extent before the community realised that this time medical advice was in accordance with the facts. Variola minor confers only an evanescent immunity to vaccination; by analogy the same may well be true as regards the protection it confers against variola major, while we know variola major confers a long period of immunity against itself, vaccination, and variola minor. The official view being that all small-pox is the same, what advice is to be officially tendered to persons who have had small-pox within five years if again exposed to infection? To me the protection conferred by vaccination lasting longer against variola minor than variola major is a point of some diagnostic value, and the Glasgow figures for variola major in 1921 and those of the C.M.O.'s annual report of 1923 are of some interest when compared.

Drs. Millard and Garrow both show that the majority attitude is no longer tenable, and I would like, Sir, to reiterate my view that an investigation of the whole subject is very necessary; also that as vaccination has not been officially investigated for 30 years it would be a great pity were a partial inquiry to be granted as the result of lay pressure, the profession remaining supine in the matter.

I am, Sir, yours faithfully,

ROBERT W. JAMESON.

West Wickham, Kent, Feb. 3rd, 1925.

EXTENSOR PLANTAR RESPONSE IN POISONING BY MORPHINE.

To the Editor of THE LANCET.

SIR,—Dr. G. M. Kendall's observation of a bilateral extensor response in a case of morphine poisoning (THE LANCET, Feb. 7th, p. 308) is not without precedent. Personally I recorded a similar experience in 1914 (*Practitioner*, vol. xciii., p. 330), and another case is certified by Sir James Purves-Stewart (Diagnosis of Nervous Diseases, sixth edition, p. 97). In the paper quoted above my purpose was to show that coma per se, that is apart from organic disease of the central nervous system, may be an influence sufficient to determine an extensor response, and as such a response has now been recorded after quite a number of narcotic drugs and other soporific agents the argument advanced in my paper would appear to be strengthened. Such an explanation is surely much more probable than the hypothesis that each agent exercises some specific action on the nervous system. There are other experiences which go to support the same conclusion, though these can hardly be set forth within the compass of a brief letter.

As a general proposition it can, I think, be argued that any agency which disturbs the normal functional relation between the cerebral cortex and the motor cells of the spinal cord may be accompanied by a plantar extensor response, and among such agencies coma, however produced, obviously has a place. The practical outcome of such a doctrine is that, given a comatose patient with extensor responses, it is not necessary to conclude that such a combination inevitably means an organic brain lesion; it may mean narcotic poisoning.

I am, Sir, yours faithfully,

Feb. 9th, 1925. C. O. HAWTHORNE.

TREATMENT OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Mr. Rendle Short's interesting lectures on appendicitis (THE LANCET, Jan. 31st and Feb. 7th) afford several points for reflection and some also for criticism. On one matter in particular, the treatment of post-operative ileus, my own experience and some interest in the subject have led me to form opinions so different from his that I venture to express my views. Mr. Rendle Short is no half-hearted advocate of the administration of powerful purgatives and peristaltic stimulants in the treatment of ileus after operation for appendicular peritonitis, and no doubt there are many experienced surgeons who share this view.

If we consider the state of affairs inside the abdominal cavity during the first few days after operation for diffuse peritonitis, we will agree that ileus, in any marked degree, is due to inability of the lower small intestine to transmit its contents owing to acute inflammation of the bowel walls and also to fixation of intestinal coils by deposits of plastic lymph. Now we may treat this condition on the assumption that there is still some kick (pardon the phrase) in the intestinal walls if only a sufficiently powerful impetus be given to them to elicit a response; if the assumption is justified, and sometimes it is, then a bowel action follows, flatus is passed, and the patient will probably weather the storm. But what of the not inconsiderable number of cases in which this assumption proves false? It will be found in these that the condition has been hurried on into one of full-blown acute intestinal obstruction. I contend that it is a much better plan, safer and more likely to be followed by success, to treat the patient in the belief that the obstruction is due to transient causes and will clear up as the peritonitis subsides if we can tide him through this period; to promote this policy the intestines must be kept at rest till there is evidence of a return of function, and meanwhile the patient's vitality must be maintained. In practice, then, we should cease to administer any food or fluid by mouth (chewing of fresh fruit may be allowed) and instead institute continuous subcutaneous infusion of saline solution; empty and wash out the stomach by means of the stomach tube—the stomach will be found to contain intestinal contents often in great quantity, which emphasises the futility of relying on drinks by mouth for the patient's sustenance; administer small doses of

morphia and 12 to 24 hours later a simple enema will usually enable the patient to pass flatus and fæcal material; the enema should be repeated in 12 hours' time.

There are few things more striking in surgical work than the rapid improvement in the patient's condition, appearance, and subjective sensations which follows this treatment. As I have pointed out elsewhere, post-operative ileus can be prevented to a great extent by taking certain precautions at the operation for appendicitis and by care in the immediate after-treatment. Purgation before operation for acute appendicitis has long been recognised as a grave mistake, and I believe it to be so after operation, at least in the severe cases with diffuse peritonitis.—I am, Sir, yours faithfully,

Manchester, Feb. 8th, 1925. H. H. RAYNER.

AIR-EMBOLISM FOLLOWING URETHROSCOPY.

To the Editor of THE LANCET.

SIR,—Prof. Andrew Fullerton's letter is important as it draws attention to the fact that accidents during aero-urethroscopy are more frequent than have been recorded. Most will agree that simply on account of this urethroscopic examination should not be abandoned, but the question arises, Is aero-distension essential in every case? I have elsewhere stated (*Practitioner*, July, 1924) that it is advisable for diagnostic purposes first to examine the urethra *without* distension, for many pathological conditions are thus better observed. Hyperæmia, slight infiltration, excessive secretion, granular and patulous states of the mucous membrane vanish when the urethra is distended with air, so I personally reserve aero-dilations for obscure cases and for operative purposes. If this practice is followed no operator need fear air embolism.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 3rd, 1925. M. W. BROWDY.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Doble's article on the above in your issue of Feb. 7th, I should like to state that it has been my routine practice for many years past to examine the urine of my private patients by a long series of tests including the reaction to litmus.

In by far the greater proportion of cases of acne and so-called "seborrhœic" dermatitis the reaction has been found to be either very mildly acid to litmus or amphoteric, though on rare occasions either a high acidity or a high alkalinity has been met. I have inquired of my biochemical friends as to the validity of the simple litmus test and have been informed that it is satisfactory, any error in the litmus test lying rather on the side of its indicating a higher degree of acidity than is actually present.

When Drs. Barber and Semon published their researches on the acidity of the urine associated with "seborrhœic" dermatitis during the war I endeavoured to control their work in this country, but was unable to obtain confirmatory results, as I believe was the case with others who attempted control work. I therefore came to the conclusion that what they had described was a state of things due to the special conditions in the field and was not to be found in ordinary civilian life. In Dr. Doble's case I am on firmer ground, as he is presumably dealing with a sample of the population similar to that which I have investigated, and here I am in a position to state definitely that the urine of most cases of acne and "seborrhœic" dermatitis as seen by me in large numbers is not notably high in acidity or alkalinity.—I am, Sir, yours faithfully,

Harley-street, W., Feb. 9th. ARTHUR WHITFIELD.

BREAST DISEASE AND THE *DEMODEX FOLLICULORUM*.

To the Editor of THE LANCET.

SIR,—The article by Dr. Helen Chambers and Miss Millicent Somerset in THE LANCET of Jan. 24th under the above title, opens up a new idea for the workers in comparative medicine, and it may interest your readers to see by the accompanying photograph

Bull puppy severely affected with follicular mange.

(for which I am indebted to the late Prof. Mettam, of the Royal Veterinary College of Ireland) the widespread form which the demodex parasite often takes in the skin of the dog. The authors of the paper might have added the horse to their list of domesticated animals which can be infected, but it is in the dog that the veterinarian most commonly meets with this form of mange. It is by no means an uncommon affection and is well recognised by the canine practitioner, and, indeed, too, by many owners and breeders. In animals I have never read or heard of it as associated with cancer.

It is met with in all breeds and is more common in the young dog than the old one, the incidence of age in cancer being the reverse. Although I am not aware that especial attention has, up to the present, been paid to the point as to whether the demodex parasite can be microscopically demonstrated as common in (or around) the nipples, I know from experience that the mammæ of animals are not a usual spot for visible evidence of its lodgment. It may come on any other part of the body, and it is especially troublesome to treat around the lips and eyelids, particularly in breeds (such as the bull-dog, bloodhound, or spaniel) whose skin in those regions is loose and pendulous.

To assert decisively that it is incurable, even in the dog, is scarcely quite correct; although in most instances the trouble and length of time which it takes influences the owner to decide upon the painless destruction of the patient. Some four or five months as a minimum is usually asked for, and a variety of external preparations are used, one of the most effectual being a weak solution of chloride of zinc, applied daily after squeezing out the contents of every pustule which may be visible.

I am, Sir, yours faithfully,

FREDERICK HOBDAY, F.R.C.V.S.

Section of Comparative Medicine, Royal Society of Medicine, Wimpole-street, W., Feb. 4th, 1925.

REX *v.* BATEMAN.

To the Editor of THE LANCET.

SIR,—You are no doubt aware that this appeal came on for hearing to-day at the High Court, when the same was allowed and the conviction quashed. Judgment however was reserved, but will be given in due course. Dr. Bateman was of course discharged.

Our client wishes us to thank you for the great financial and moral support which you have given him, and which has enabled him to bring this appeal to such a successful conclusion. It is extremely doubtful whether we could have brought sufficient weight to support the appeal, without the interest which you have taken throughout the proceedings, and in support of the medical profession generally. We ourselves desire to join in our client's gratitude.

We are, Sir, yours faithfully,

AMERY-PARKES & CO.

66 and 68, Whitcomb-street, Coventry-street, London, W.C. 2, Feb. 10th, 1925.

Obituary.

SIR GEORGE ANDERSON CRITCHETT, BART., K.C.V.O.,

SURGEON-OCULIST TO THE KING; CONSULTING OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL.

WE regret to announce the death of Sir George Anderson Critchett, which occurred at a nursing home on Monday last in the eightieth year of his age, after an operation. He was a hereditary ophthalmologist, for not only could he look back on a career of over 50 years as an ophthalmic surgeon himself, but as successor to a distinguished father, he was a link with the founders of modern ophthalmology. William Bowman, Jonathan Hutchinson, George Lawson, and George Critchett were the great names in the ophthalmic world in the 'sixties and 'seventies of last century, and George Anderson Critchett, the son of the last, was born in the atmosphere of ophthalmology and was approaching manhood at the time when the discovery of the ophthalmoscope produced a renaissance in the study of diseases of the eye. "La réputation d'un père est un lourd fardeau pour le fils." But in the case of Anderson Critchett, great though his father had made the name, he undoubtedly added to its repute, and it is safe to say that few British ophthalmic surgeons were better known in the world.

Born in London in 1845, Anderson Critchett was educated at Harrow, where he gained the prize for English literature, and Caius College, Cambridge, where he captained the College cricket eleven and made many friends, but did not proceed to a medical degree. On leaving Cambridge as a Bachelor of Arts in 1867, he entered the Middlesex Hospital and qualified M.R.C.S. in 1872, later proceeding to the F.R.C.S. Edin. There was a period in his career, however, when it seemed doubtful whether medicine or music would claim him. He possessed a fine baritone voice, a love for the drama, and social qualities which acted together to draw him away from the profession of medicine, but affection for his father and a desire to be of help to him prevailed. He decided to follow in his father's footsteps and accordingly filled junior ophthalmic appointments until he secured election first to the Royal Free Hospital as ophthalmic surgeon and then to St. Mary's Hospital as lecturer on ophthalmic surgery. There followed upon this good start a life of steady professional success. He was appointed ophthalmic surgeon to St. Mary's Hospital in 1881 and rapidly became known both as operator and learned man, and from the beginning his reputation was as high on the continent as in England. It is of interest to note that his first published paper on "Inoculation in Ophthalmic Practice" was published in a French journal, *Annales d'Oculistique*, in 1877. It was his work at St. Mary's Hospital that finally established his reputation and incidentally built up one of the biggest eye cliniques at any of the general hospitals in London, and he was the first to recognise how much he was aided in his work at St. Mary's by the late Henry Juler and how loyally they worked together when a few years later Juler was co-opted as his colleague. His career from now onwards is a simple record of increasing honours accorded to him. He was appointed surgeon-oculist in ordinary to the late King Edward in 1901, in which year he was knighted, being advanced to a baronetcy in 1908.

The public positions held by Sir Anderson Critchett were very numerous. He was at different times President of the Ophthalmological Society, President of the Council of British Ophthalmologists, President of the Ophthalmological Section of the International Congress of Medicine, and President of the International Ophthalmological Congress, in this way repeating an honour which had been bestowed upon his father a generation before. He had been President of the Section of Ophthalmology in the Royal Society of Medicine, and his conduct in the presidential chair on so many occasions never failed to win respect. His polished speaking was especially happy on ceremonial occasions, while his contributions when he intervened in debate were founded on vast clinical experience.

Critchett was also a member of the Société Française d'Ophtalmologie, and certain of his papers were published in the Transactions of that society and simultaneously in THE LANCET. He contributed, as has been said, to the *Annales d'Oculistique* and, of course, to the Transactions of the Ophthalmological Society. From beginning to end his writings were of a practical character. The first paper published in our columns was instigated by the arrival of cocaine. Before the introduction of cocaine, in England at any rate, the majority of ophthalmic surgeons administered an anæsthetic during the operation for extraction of cataract, but Anderson Critchett pointed out that the absence of pain secured by the new agent, though of the greatest possible value, had certain drawbacks, and described his own technique for iridectomy, using the ring-finger to elevate the upper lid, as "Nature's speculum." Thirty years later, in his address to the Seventeenth International Congress of Medicine as President of the Section of Ophthalmology, he described the value of the X rays as an aid to the location of foreign bodies in the eye and its adnexa, and amongst similar new adjuncts to diagnosis mentioned the delicate manometers assisting the surgeon to estimate the tension of the eye. Of other contributions to the technical side of his specialty we may mention his method of employing the cautery in the operation for conical cornea and his advocacy of treating certain cases of lamellar cataract by making an artificial pupil, but he generally preferred to practise well-tried methods rather than to devise new ones. He was never a prolific writer, and to the regret of many of his pupils, much of his teaching, which would have been of great value, is lost for want of recording. For he was a great clinician and unrivalled as an operator. To see Critchett removing a cataract in the heyday of his skill was to see the perfection of operative technique. Never a hurried or purposeless movement was made, and if any untoward complication had to be met, it was faced with the same steady placidity as if it had been foreseen from the first. He had to a very high degree the most valuable capacity of rousing in his patients an implicit feeling of confidence and the equally valuable capacity of creating a feeling of friendship in his colleagues.

During the war he served as ophthalmological surgeon to King Edward VII. Hospital and to King George's Hospital, and in 1919 received the K.C.V.O. His last professional honour reached him as recently as 1924, when he was chosen Master of the Oxford Ophthalmological Congress. Apart from the distinctions which he received from two kings, Critchett

held every honour that it was possible for his colleagues to confer on him. Such a record by itself shows the esteem in which he was held by those best able to judge of his work, an esteem which could only have been earned by the genuineness of character which gave rise to it. To few men has it been given to have such a happy full life; happy in his work, happy in his friendships, and happy beyond expression in his family life, he reached the end of his long term of years without ever growing old.

Sir Anderson Critchett married a daughter of the late C. J. Dunphie, of Rathdowney, Queen's Co., by whom he had two daughters and one son, George Montague, who succeeds him in the title.

THE LATE DR. JOHN FRASER.

IN appreciation of the late Dr. John Fraser, Medical Commissioner of the Scottish Board of Control, whose death we announced recently, we have received the following notice from Prof. George M. Robertson, to whom also we are indebted for the portrait of Dr. Fraser. Prof. Robertson writes:—

"News of the death of Dr. John Fraser in the eightieth year of his age, as the result of a fall when alighting from a tramcar, has been received with sorrow over the whole of Scotland, where in his capacity of Deputy Commissioner between the years

1877 and 1895 he visited boarded-out patients in every parish. He knew the country so well that he said he could not be placed in any part of it that was unfamiliar to him. In addition, he was on friendly terms with most of the inspectors of poor and medical officers of these parishes. In 1895 he was promoted Commissioner, and retired owing to the age-limit in 1910. Dr. Fraser was an honorary member of the Medico-Psychological Association, and on his retirement from office he was presented with his portrait painted by Mr. Fiddes Watt, R.S.A. Since his retirement he has been much interested in charitable organisations, and especially in the work of the Society for the Prevention of Cruelty to Children. He has led a useful and a good life, which has been characterised by untiring energy and singleness of aim in his work. Above all he has been distinguished by his friendliness, his kindness, and his deep interest in all those persons with whom he came into contact in the discharge of his duties, whether these were officials or patients. His relations with the former were so good and his honesty of purpose so transparent that no official had less difficulty than he in having his recommendations put into effect. These were priceless gifts to one in his position, who was engaged during his term as Commissioner in levelling up the methods of administration and of nursing in the mental hospitals of Scotland. He was interested in the hospitalisation of asylums, in improved methods of nursing both by day and by night, in the nursing of male patients by women, in the abolition of restraint and seclusion, and in the precaution against fire. His genuine sympathy for the patients, his knowledge of their conditions of life, and his kindly manner of treating them, won their affection and confidence. No one appealed to him in vain. He had words of comfort for all which smoothed over their difficulties. He was regarded by them as a real friend."

Dr. Fraser was born in Thornhill, Dumfriesshire, and studied medicine in Edinburgh, where he had a distinguished career as a student, gaining nine medals and graduating with first-class honours in 1870. After holding resident appointments in the Edinburgh Royal Infirmary, he was appointed assistant medical officer to the Fife and Kinross District Asylum at Springfield, Fife. A few years later he was promoted medical superintendent, succeeding Sir John Batty Tuke in this post. Dr. Fraser married a sister of Sir John Batty Tuke, who predeceased him, and he is survived by three sons and two daughters. One of the former is Dr. J. S. Fraser, aural surgeon, Edinburgh.

Medical News.

UNIVERSITY OF LONDON: LECTURES AND DEMONSTRATIONS IN MEDICAL HYDROLOGY.—The third annual course at the University of London has been arranged by the Committee for the Study of Medical Hydrology in Great Britain, and will take place from April 27th to May 2nd next, concluding with visits and demonstrations at Buxton and Matlock. Introductory discourses will be given by Dr. John C. Thresh on the Types of Water which Occur in Nature; on Hydro-geology, by Mr. H. Dewey, of H.M. Geological Survey; and on the Capillary Circulation in the Skin by Prof. Barcroft. Dr. Fortescue Fox will deal with the Properties and Actions of Medicinal Waters, the Actions and Uses of Baths, and the Use of Heat in the Treatment of Disease. Applied Hydrology forms the subject of three lectures; by Dr. J. B. Burt on Disorders of Digestion; by Dr. Vincent Coates on Arthritis; and by Dr. Rupert Collins on Neurasthenia. These lectures will be delivered at the University of London, South Kensington. Demonstrations on the Bacteriological, Physiological, and Chemical Analysis of Waters will be given in the Counties' Public Health Laboratories; and by Dr. Leonard Hill at the National Institute for Medical Research on the Effects of Open Air and Sunshine upon the Body. At Buxton there will be brief lectures and demonstrations, both on methods of treatment and of research, given at the bath establishments and at the Mineral Waters Hospital, by local medical men. Full particulars may be obtained from the Hon. Secretary, Hydrology Committee, University Extension Board, University of London, S.W. 7.

The *Introductory Medical Course* for students who have matriculated in the University of London will begin at University College on Monday, March 2nd. Intending students should apply at once and should attend at the College on Monday, March 2nd, at 11 A.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On March 2nd a comprehensive three weeks' course in Medicine, Surgery, and Gynæcology will be conducted at the Royal Waterloo Hospital. There will also be demonstrations given by the staff in the wards and out-patients' department. Beginning on March 9th is a four weeks' course in Ophthalmology at the Central London Ophthalmic Hospital. The course is an afternoon one and deals with the more important diseases of the eye. An Operative Surgery class will be held by arrangement. The Chelsea Hospital for Women is arranging a special three weeks' course from March 16th, and the work will embrace the various Gynæcological Affections, and also operations and demonstrations by members of the staff. The Hospital for Diseases of the Chest (Brompton) begins a fortnight's course on March 16th. The course consists of demonstrations, lectures, operations, &c., in all the

departments associated with chest diseases. The Royal Northern Hospital in conjunction with the Royal Chest Hospital is arranging an intensive course in Medicine, Surgery, and the Special Departments from March 23rd to April 4th. Copies of the syllabuses of the above-named courses, together with the Fellowship Bulletin, may be had on application to the Secretary at 1, Wimpole-street, W. 1.

HULL AND A UNIVERSITY COLLEGE.—The Right Hon. T. R. Ferens, of Hull, a P.C. and a former M.P. for East Hull (1905-1918), has written to the Lord Mayor stating that he has set aside £250,000 as a nucleus for founding a University College for Hull. Amongst his other gifts to Hull were £10,000 for the purchase of a site for a new technical college and £60,000 for the erection of a new art gallery.

EPSOM COLLEGE WAR MEMORIAL.—The Bishop of Winchester, the Visitor of the College, will consecrate the nave of the chapel at 3 P.M. on Saturday, Feb. 21st. The total cost of rebuilding the chapel, which work was begun in July, 1923, will be about £11,500, and so far the Council have received contributions amounting to about £9000. Contributors to the War Memorial Fund who wish to be present at the ceremony are requested to apply for a card of admission to the Bursar, Major Walter L. Giffard, The College, Epsom, Surrey.

CHADWICK PUBLIC LECTURES. — On Monday, March 9th, at 8 P.M., in the Inner Temple Hall, Lord Newton will give an address on the Necessity for Legislation with Regard to Smoke Abatement. Sir William J. Collins will be in the chair. In May Dr. E. Brumpt, Professor in the Faculty of Medicine at the University of Paris, will give two lectures (in English): (1) How to Conduct an Anti-Malarial Campaign, and (2) the Prophylaxis of Sleeping Sickness. Admission to all Chadwick public lectures is free. Further information may be obtained of the Secretary, Mrs. Aubrey Richardson, O.B.E., at the offices of the Trust, 13, Great George-street, Westminster, S.W. 1.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A special post-graduate course covering the work of all the departments of the Prince of Wales's General Hospital, Tottenham, N., begins at 10.30 A.M. on Monday, Feb. 16th, with a demonstration of the graphic method of studying heart disease. It will be continued every day throughout the ensuing fortnight, each week, however, being complete in itself. In the mornings there are to be demonstrations of modern clinical methods, in the afternoons demonstrations of groups of selected cases and clinics in the various departments of the hospital. At 4.30 P.M. each day there will be a special clinical lecture. The opening lecture will be given by Mr. James Sherren on Appendicitis, and all the lectures at this hour will be free to members of the Fellowship of Medicine as well as to members of the College, while the opening lecture will be free to members of the profession. The succeeding lectures of the first week will be on the Home Treatment of Diabetes, by Dr. F. G. Crookshank; on Cancer of the Colon, by Mr. H. W. Carson; on Spinal Anæsthesia, by Dr. C. F. Hadfield; and a lantern lecture, by Mr. J. Howell Evans on Cysts and Cystic Conditions of the Neck. On Saturday, at 11 A.M., Dr. F. Thomson will give at the North-Eastern Fever Hospital, St. Ann's-road, Tottenham, a demonstration of cases illustrating the Early Diagnosis of the Infectious Fevers. Luncheon will be obtainable in the neighbourhood of the hospital, and at 4 P.M. each day tea will be provided. Application for admission to the course should be made to the Secretary of the Fellowship of Medicine (1, Wimpole-street, W. 1) or to the Dean of the College.

LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN.—The Countess of Derby on Feb. 5th opened the new administration wing of this hospital situated at Leasowe, near Liverpool. The Liverpool open-air hospital for children suffering from surgical tuberculosis provides accommodation for 260 children, the majority of whom are sent into the hospital crippled. The average duration of treatment is from 18 months to two years. At the ceremony on Feb. 5th the hon. treasurer was able to claim that the working cost of the hospital of £2 per bed per week was the lowest for similar institutions in the Ministry of Health's returns, while the chairman of the medical board announced a percentage of 78·4 of the children discharged during the previous year with the disease quiescent. The new wing has cost some £16,500 to build, of which about £10,000 is still to find. The hospital is run under the ægis of the Liverpool Child Welfare Association, and a feature of "Leasowe" is the admirable after-care system by which all discharged patients are followed up, home conditions reported on, help given, and relapses dealt with at an early date.

Dr. James Hopwood Jeans, F.R.S., secretary of the Royal Society, and Sir William Henry Ellis, G.B.E., have been appointed to be members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

GIFT OF SANATORIUM TO DURHAM.—Subject to the approval of the Ministry of Health, the Durham County Council have accepted an offer from the Marquis of Londonderry of Seaham Hall, to be used as a sanatorium for the treatment of tuberculous cases in the county. After suitable alternations the hall would afford accommodation for about 80 patients.

PROBLEM OF THE CRIPPLE.—Mr. M. Fitzmaurice-Kelly addressed the Brighton and Hove Rotary Club on Feb. 4th on the subject of the Problem of the Cripple. Taking the county of Sussex as a whole, Mr. Fitzmaurice-Kelly declared there were some 1500 cripples, and he claimed that if the cases were taken in hand in earliest childhood and treated with the skill which medical and surgical science had now devised, the very great majority of them were curable. He spoke of the system of treatment which had originated in Shropshire and was now being copied in various parts of the country, Wiltshire and Somersetshire, and expressed the opinion that the time was ripe for Sussex to make a move. He suggested that a hospital of 100 beds would meet the county's needs and would probably cost £60,000 or £70,000 to establish, and its running expenses would be about £12,000 to £15,000 a year. He did not think this was beyond the means of the county, but meanwhile he urged the immediate setting up of local clinics in various centres.

MANCHESTER'S £10,000,000 WATER-SUPPLY.—The Waterworks Committee of the Manchester Corporation have recommended the City Council to proceed at once with the Haweswater reservoir scheme for increasing the city's water-supply, which will cost about £10,000,000, and described as the biggest of its kind in the country. It was stipulated when Parliament sanctioned the scheme in 1919 that it should be completed by 1934. The scheme involves the construction of a giant aqueduct nearly 80 miles in length from Haweswater to Manchester, of which 28 miles will be underground. In carrying out the scheme, the lake will require to be raised about 90 feet, its length of two and a quarter miles increased to four miles, and widened by about a quarter of a mile, and its surface increased from 350 to 1000 acres. The raising of the water level by means of a dam will mean the submergence of the hamlet of Mardale, an hotel, several farms, and a parish church. The church it is proposed to remove and erect elsewhere. It is computed that the scheme will give Manchester an additional potential daily supply of 70,000,000 gallons and will ensure the city's water-supply for the next 50 or 60 years. Manchester at present receives 52,000,000 gallons of water a day, and it is calculated officially that at the present rate of increase of demand the existing resources will be exhausted in eight or nine years. The Thirlmere scheme was sanctioned in 1879, and the fourth pipe therefrom was only recently completed. The Thirlmere scheme cost the city £7,000,000.

SUSSEX PROVIDENT SCHEME.—Great progress was made during 1924 by the Sussex Provident Scheme. By the scheme provision is made against the more serious illness requiring hospital treatment or the services of a specialist, to which the National Health Insurance scheme does not apply, and people with incomes up to £350 a year can, by joining into groups or associations, or by registering direct, insure against the most serious possibilities that illness or accident may hold out over the average human being. The scheme saw its inception in 1920, and although it was at first viewed with a certain amount of suspicion there were just over 7000 subscribers to it at the end of 1923, and at the end of 1924 the figure was only a few under 10,000. With the dependents, the total number who stand to benefit is well over 25,000. During 1924 the following amounts, totalling £5520, were paid to the hospitals named for services rendered to subscribers to the scheme:—

Royal Sussex County Hospital, £2806; Royal Alexandra Hospital for Sick Children, £823; New Sussex Hospital, £538; Brighton, Hove and Preston Dispensary, £309; Haywards Heath Hospital, £248; Sussex Maternity and Women's Hospital, £207; Sussex Eye Hospital, £170; Brighton and Hove Provident Dental Hospital, £120; Sussex Throat and Ear Hospital, £76; Uckfield Cottage Hospital, £19; Royal East Sussex Hospital, Hastings, £2; Stephen Ralli Memorial Laboratory, £27; Consultations, £9; Queen's Nurses, £9; refunded for treatment to subscribers at non-coöperating hospitals, £157.

These figures suggest that the anticipations of the founder, Dr. J. F. Gordon Dill, are being fully realised, for they encourage the hope that the scheme is providing a solution for some of the financial problems of the voluntary hospitals.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 16th.

MEETING OF THE SOCIETY: at 5.30 P.M.
Special Discussion on
Non-specific Disturbances of Health due to Vitamin Deficiency.
Speakers:
Dr. Leonard Williams, Colonel R. McCarrison, Dr. William Cramer, Dr. G. M. Findlay, and others.
(*The Meeting may be adjourned at* 7 P.M., *and resumed at* 8.30 P.M.)

Tuesday, Feb. 17th.

PATHOLOGY: at 8.30 P.M.
D. Thomson: Researches on *B. pneumosintes.*
G. M. Findlay: Acceleration of the Carcinogenetic Action of Tar by Radiant Energy.
A. N. Goyle: The Virulence and Toxigenicity for Mice of "Normal" and "Rough" Forms of *B. enteritidis Gaertner.*

Wednesday, Feb. 18th.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Mr. G. E. Gask: The Medical Staff of Edward III.
Exhibitions:
Mr. W. Reeve Wallace and Dr. N. G. Horner: A Paduan Diploma of 1628.
Dr. Arthur T. Davies: A Diploma of Montpellier.

Thursday, Feb. 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases:
Mr. Haldin Davis: Late Post-X Ray Pigmentation.
Dr. H. Semon: (1) Widespread Cicatrising Streptothrix Infection. (2) Lichen Planus of Mouth and Lips.
Dr. H. MacCormac: Mycosis Fungoides (15 Years' Duration).
Dr. McCormac and Dr. Cockayne: Lupus Pernio.
Dr. Dowling: Pseudopellade following Lichen Planus (and two other cases).
Paper:
Dr. Aldo Castellani: Observations on Some Skin Diseases Common in Central America (illustrated with lantern slides, microscopical sections, &c.).

Friday, Feb. 20th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Papers:
Dr. Norman MacDonald: The Influence of Spinal Manipulation and Adjustment on Certain Types of Cases.
Dr. R. M. Beath: Dysostosis Cleidocranialis Hereditare.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 16th.— 9 P.M., Sir Bernard Spilsbury: Wounds and Other Injuries (First Lettsomian Lecture).

HARVEIAN SOCIETY OF LONDON.
THURSDAY, Feb. 19th.—8.15 P.M., Clinical Meeting at St. Mary's Hospital.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Feb. 19th.—8.15 P.M., Prof. B. Blacklock will read a paper on Schistosomiasis and Goitre in Sierra Leone (illustrated by lantern slides). Preceded at 7.45 by a Demonstration on the Pathology of Experimental Leishmaniasis in the Hampster, by Dr. Henry Meleney, of Peking.

CHELSEA CLINICAL SOCIETY.
TUESDAY, Feb. 17th.—8.30 P.M. (at the Club Room, St. George's Hospital, entrance in Knightsbridge), Sir Thomas Parkinson and Mr. A. Ralph Thompson will open a discussion on Some Diseases Common to the Climacteric (both sexes).

TUBERCULOSIS SOCIETY, 1, Upper Montague-street, Russell-square.
FRIDAY, Feb. 20th.—8 P.M., Dr. Clive Riviere: Lantern Talk on Pneumothorax.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Feb. 16th.—5 P.M., Mr. C. P. G. Wakeley: The Ætiology, Pathology, and Treatment of Ectopic and Imperfect Descents of the Testes.
WEDNESDAY.—5 P.M., Dr. G. S. Williamson: The Anatomy and Physiology of the Thyroid Apparatus.
FRIDAY.—5 P.M., Conclusion of Dr. G. S. Williamson's lecture.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 16th, to SATURDAY, Feb. 21st.—WEST LECTURE HALL, Royal Society of Medicine. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. Friday, Feb. 20th, 5.30 P.M., Sir James Dundas-Grant on Some Points in the Diagnosis and Treatment of Tuberculosis and Cancer of the Larynx.—NORTH-EASTERN POST-GRADUATE COLLEGE (Prince of Wales's Hospital, Tottenham). Intensive Course in Medicine, Surgery, and the Special Departments. With the exception of Saturday, work will begin at 10.30 A.M., continue until 5.30 P.M., and will include Demonstrations, Medical and Surgical Clinics, Operations and opportunity for study in the Special Departments—COMBINED COURSE IN DISEASES OF CHILDREN, Paddington Green, Victoria Hospital, and the Children's Clinic. Two sessions daily.—LONDON LOCK HOSPITAL, 91, Dean-st., W. Comprehensive Course, clinical work daily, and lectures.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Demonstrations daily in the various departments. Pathological demonstrations arranged for, and Tuesday and Thursday special lectures. Tickets for this particular course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 P.M. Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Feb. 16th.—4.30 P.M., Mr. J. Sherren, C.B.E.: Appendicitis.
TUESDAY.—4.30 P.M., Dr. F. G. Crookshank: Home Treatment of Diabetes.
WEDNESDAY.—4.30 P.M., Mr. H. W. Carson: Cancer of the Colon.
THURSDAY.—4.30 P.M., Dr. C. F. Hadfield: Spinal Anæsthesia.
FRIDAY.—4.30 P.M., Mr. J. Howell Evans: Cysts and Cystic Conditions of the Neck (lantern).
SATURDAY.—11 A.M., Dr. Frederic Thomson (at the North-Eastern Fever Hospital): The Early Diagnosis of the Infectious Fevers.
Daily.—*Intensive Course:* 10.30 A.M. to 12.45 P.M., Demonstrations of Clinical Methods; 2 to 3 P.M., Demonstration of Groups of Selected Cases; 3 to 4 P.M., Clinics in General and Special Departments; 4.30 P.M. Clinical Lectures.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: FEB.–MARCH, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Feb. 16th.—2 P.M. Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Subacute Combined Degeneration: Dr. Riddoch.
TUESDAY, Feb. 17th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Symptomatology of Cerebral Tumours: Dr. Grainger Stewart.
THURSDAY, Feb. 19th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the VIIIth Nerve (in O.P. Department): Mr. Just.
FRIDAY, Feb. 20th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Recovery from Streptococcal Meningitis Complicating Otitis Media: Mr. Sydney Scott.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, Feb. 19th.—12 noon, The Cerebro-spinal Fluid, Physiology and Pathology: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, Feb. 16th.—12 noon, Afferent Paths and Physiology of Sensation: Dr. Hinds Howell.
The Fee for this Course will be £2 2*s.*
Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2*s.*

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.
WEDNESDAY, Feb. 18th.—3.30 P.M., The Optic Nerve: Mr. Leslie Paton.
Applications for this Course should be made early. Fee £5 5*s.* if taken as a separate Course, or £3 3*s.* if taken with the General Course.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. GREENFIELD, Dean of Medical School.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE, West Smithfield, E.C.
MONDAY Feb. 16th.—5 P.M. (and on Tuesday, Wednesday, and Thursday at the same hour), Sir William I. de C. Wheeler: Some Practical Considerations and Experiences in the Conservative Treatment of Fractures of the Pelvis and the Lower Extremity.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.
MONDAY, Feb. 16th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr Donald Armour: Surgical Wards.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald Genito-Urinary Dept.
FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.
Daily, 10 A.M., to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.
THURSDAY, Feb. 19th.—5 P.M., Mr. T. B. Davies: Clinical Aspects of Abortion.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Feb. 19th.—4 P.M., Mr. Higgins: Intussusception.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Feb. 17th.—5 P.M., Dr. Wilfrid Fox: Cutaneous Syphilis.
THURSDAY.—5 P.M., Dr. Wilfrid Fox's lecture concluded.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, Feb. 16th.—(At the Samaritan Hospital.) Dr. Burns: Significance of Uterine Hæmorrhage in Gynæcological Diagnosis.
TUESDAY.—(At the Maternity Hospital.) Dr. Leith Murray: Cæsarean Section.
THURSDAY.—(At St. George's Skin Hospital.) Dr. Barendt: Skin Cases.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).
FRIDAY, Feb. 20th.—4.30 P.M., Dr. F. H. Lacey: Antenatal Management.

ANCOATS HOSPITAL, MANCHESTER.
THURSDAY, Feb. 19th.—4.30 P.M., Mr. Diggle: Diseases of the Œsophagus.

ROYAL INSTITUTION OF GREAT BRITAIN, 21, Albemarle-street, W.
FRIDAY, Feb. 20th.—9 P.M., Prof. T. H. Pear: Acquiring Muscular Skill.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.
TUESDAY, Feb. 17th.—4 P.M., Dr. Elliot and Dr. Skene: Albuminuria in Diseases other than those Primarily of the Kidney. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.
Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.
WEDNESDAY, Feb. 18th.—6 P.M., Prof. R. H. A. Plimmer: Diseases Caused by Badly Chosen Diets.

Appointments.

Willesden General Hospital, Harlesden-road, N.W.: FAULKNER, H. A., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Anæsthetist; HARVEY, F. MELVILLE, M.R.C.S., L.R.C.P. Lond., a Member of the Honorary Medical Staff.

Certifying Surgeons under the Factory and Workshop Acts: ARNOTT, T. F., M.B., Ch.B. Glasg. (Bovey Tracy); KIRKMAN, A. H. B., F.R.C.S. Edin., L.R.C.P. Lond., M.R.C.S. (Staplehurst).

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Eye Hospital.—H.S. £110.
Birmingham City Sanatorium.—Asst. Tub. O. and Asst. M.O. £450.
Blackpool, Victoria Hospital.—Asst. H.S. £120.
Brighton, New Sussex Hospital.—H.S. £50.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £150.
Bristol General Hospital.—House Appts. All at rate of £80.
Bristol Royal Infirmary.—Obstet. and Cas. H.S.'s. Each £100. H.P.'s and H.S.'s. Each £80. Also Dent. H.S. £116.
Bury and District Joint Hospital Board.—Res. Asst. Med. Supt. £400.
Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Res. Clin. Asst. 50 guineas for six months.
Chelsea Hospital for Women, Arthur-street, S.W.—Reg. £50.
Darlington Education Committee.—Asst. Sch. M.O. £600.
Dorset Mental Hospital, Herrison, near Dorchester.—Third Asst. M.O. £300.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250.
Hampstead, New End Hospital.—Sen. and Jun. Res. Asst. M.O.'s, at rate of £250 and £150 respectively.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300.
Ipswich, East Suffolk and Ipswich Hospital.—Election of Visiting Staff.
Kettering and District General Hospital, Northampton.—R.M.O.
Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Bacteriology. £500.
Lincoln City and County Borough.—M.O.H. £900.
Madras and Southern Mahratta Railway Co., Ltd.—Dist. M.O. Rs.1550 per mensem.
Manchester City.—Asst. Tub. O. £620 19s. 9d.
Manchester, Monsall Hospital for Infectious Diseases.—First Asst. M.O. £600. Also Jun. Med. Asst. £350.
Manchester, Royal Manchester Children's Hospital.—Asst. M.O. at rate of £150.
Manchester, St. Mary's Hospitals.—Res. Obstet. O. and Res. Surg. O. Each £200.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. P. in charge of Electrical and Massage Depts.
Nottingham General Hospital.—Pathologist. £350 and private fees allowed.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S. at rate of £100.
Royal Chest Hospital, City-road, E.C.—Phys. Also M.O. in charge of Tuberculosis Dispensary. £750.
Royal Northern Hospital, Holloway, N.—Res. M.O. £200. Also. Asst. Surg. O. £150.
St. Marylebone Hospital, W.—Visiting Consulting Dental S. £50.
St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. and Hon. Ophth. S.
St. Thomas's Hospital.—Res. Asst. Surg.
Western Ophthalmic Hospital, Marylebone, N.W.—Sen. and Jun. H.S.'s at rate of £150 and £100 respectively. Also Hon. Dental S.
West Ham County Borough.—Asst. Sch. M.O.'s. £600.
West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.
Windsor, King Edward VII. Hospital.—Secy.
Wolverhampton and Staffordshire Hospital.—H.S. at rate of £150.
York City Council.—M.O.H. and Sch. M.O. £1000.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Buntingford, Herts; Tenterden, Kent; Misterton, Notts.

Births, Marriages, and Deaths.

BIRTHS.

DOUGLAS.—On Feb. 4th, at a nursing home, Reading, the wife of Dr. A. McDonald Douglas, The Grange, Silchester, of a son.
JOLL.—On Feb. 6th, at a nursing home, the wife of Cecil A. Joll, M.S. Lond., F.R.C.S. Eng., of Harley-street, of a son.
LISCOMBE.—On Dec. 29th, 1924, at Syriam, Burma, the wife of R. H. Liscombe, M.B., B.S., of a son.
PLATTS.—On Feb. 3rd, the wife of Dr. S. Goodman Platts, Clifton Lawn, York, of a son.
SKENE.—On Jan. 31st, at Sotby Rectory, Lincolnshire, the wife of the Rev. C. M. B. Skene (Dr. Charlotte Grace Skene, M.B., B.S.), of a son.

MARRIAGES.

DODD—LODGE.—On Feb. 3rd, at the Chapel of the Charterhouse, Dr. Fredck. H. Dodd, of Devonshire-place, W., to Kathleen Elizabeth, youngest daughter of Alfred Lodge, Esq., of Banbury-road, Oxford.
LAWRENCE—ZIMMERMAN.—On Feb. 5th, by licence, at Poplar, London, George S. Lawrence, M.B., to Deenah L. Zimmerman, only daughter of Mr. and Mrs. Zimmerman, Nottingham.
M'QUADE—BURKE.—On Jan. 28th, at the Parish Church, Chertsey, Surrey, Cecil Emrys M'Quade, M.B. Dub., F.R.C.S.E., of Harcourts, Chertsey, to Rosalind, youngest daughter of Mr. and Mrs. Edmund Burke, Cowley House, Chertsey.
RICHARDSON—BIRKHEAD.—On Feb. 3rd, at St. John's, Boscombe, very quietly, Walter Silverwood Richardson, M.D., F.R.C.S. Edin., of Melbury, Boscombe, Bournemouth, to Maud Alice Birkhead, of Aston Grays, Bournemouth.

DEATHS.

BROWN.—On Feb. 2nd, at Glentworth-street, Limerick, Brig.-Surgeon Lieut.-Colonel Henry Thomas Brown, M.D., late Army Medical Staff, aged 81 years.
CHEESMAN.—On Feb. 6th, at Church Lane House, Lymington, Hants, George Edward Alexander Cheesman, L.R.C.P., L.S.A., &c., aged 71.
COLLINS.—On Feb. 3rd, at St. Andrew's, Lyme Regis, Brigade-Surgeon Francis Collins, M.D., late 5th Northumberland Fusiliers, in his 93rd year.
CRICHLOW.—On Feb. 6th, at Brompton, Egbert Aubrey Lennox Chichlow, M.R.C.S., L.R.C.P., of Trinidad, aged 30.
CRITCHETT.—On Feb. 9th, at a nursing home, following an operation, Sir Anderson Critchett, Bart., K.C.V.O., F.R.C.S., Surgeon-Oculist to the King, of Harley-street, W.
ROWS.—On Jan. 28th, at 65, Rectory-lane, Prestwich, Richard Gundry Rows, C.B.E., D.Sc., M.D., Pathologist to the County Mental Hospital, Prestwich, younger son of R. G. Rows, The Willows, Helston.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

COLONIAL HEALTH REPORTS.

TURKS AND CAICOS ISLANDS.

THE population of these islands at Dec. 31st, 1923, was estimated at 5697. During the months of March and April the Turks Islands were visited by a rather severe epidemic of dysentery. Some of the cases had all the symptoms of cholerine. At that time cholerine was epidemic both in Haiti and Santo Domingo, and no doubt it was imported here through intercourse with those places. There were ten cases of the pulmonary type of tuberculosis during the year—about the average number. Malaria is always present to some extent. There were three cases of syphilis under treatment. Pellagra has been prevalent during the last few years. Although the islands are within the tropics the climate is not unhealthy. The severe heat in the hot months is tempered by the constant sea breezes. The temperature ranges from 60° F. minimum to 93° F. maximum, and the rainfall in 1923 was 25·10 inches. The islands are administered as a dependency of Jamaica.

FIJI.

According to the census of 1921 the population was 157,266, comprising 84,475 native Fijians, 60,634 Indians, 3878 Europeans, and some Polynesians and others. The general health of the natives during 1923 was satisfactory. The birth-rate for the period was 32·24 per 1000 and the death-rate 22·53 per 1000. Apart from a widespread epidemic of a mild type of influenza, from which only a few deaths resulted, no serious epidemic of infectious diseases occurred. A few small groups of cases of typhoid were reported, but in no case did the disease become epidemic. The decrease in the number of dysentery cases was maintained, and this once prevalent disease is now of comparatively rare occurrence. Over 4000 injections of salvarsan or neokharsivan were administered, and have effected a considerable reduction in the number of cases of tertiary yaws and kindred diseases. The campaign conducted under the auspices of the Rockefeller Foundation for the eradication of ankylostomiasis or hookworm was continued with vigour; 40,000 individuals, of which number one-half were Fijians, received treatment. There is no doubt that the wholesale treatment of the natives for this prevalent disease effects an improvement in the physical conditions of the race. The native medical practitioners, who exercise constant supervision over the health of the natives in the country districts, treated 25,000 cases of major and minor ailments during the year. Fiji is exceptionally healthy for a tropical country. It is protected against most of the infectious fevers by its distance from a continent. The absence of the anopheles mosquito prevents the occurrence of malaria. Plague, yellow fever, small-pox, or cholera have never gained admittance. Neither scarlet fever nor diphtheria appears to flourish, and first attacks of appendicitis hardly ever occur. Intravenous injection continues to give good results in leprosy, and several more cases have qualified for discharge from the asylum. Education through native medical practitioners and other means is removing from the native mind the belief in the desirability of infection of children with yaws. The salvarsan group of drugs is much sought after and, if funds allow, it is now practicable to consider the eradication of a disease almost as deadly in its after-effects as syphilis is elsewhere. The climate is generally unsatisfactory for those suffering from tuberculosis or asthma. The moist heat has an enervating effect on the nervous system. The total rainfall recorded at Suva during the year was 109·38 inches. The mean shade temperatures at Suva for the year were 70·4° F. minimum and 81·0° F. maximum.

GIBRALTAR.

The Hon. C. W. J. ORR, C.M.G., Colonial Secretary, in his report for 1923 states that the estimated total civil population of the colony at the close of the year was 17,346, of whom 16,042 are fixed residents. These figures represent the population between sunset and sunrise; to calculate the daily population it is necessary to add some 8000 aliens and 1500 British subjects resident in the neighbouring Spanish town of La Linea, who come into Gibraltar daily. The number of births during the year was 365, of which 176 were boys and 189 girls. The birth-rate per 1000 was 22·57. The births refer to the fixed population only, as, under the Aliens Order in Council, no alien may give birth in the colony; 294 deaths were registered—148 males and 146 females—and the crude death-rate was 16·95 per 1000. Infantile mortality was 109·5 per 1000 and deaths from pulmonary tuberculosis 1·2 per 1000. The number of deaths from cancer was 18, an increase of three on the number for the previous year. The general health and sanitary conditions of Gibraltar throughout the year were excellent, and, with the exception of an outbreak of scarlet fever of a mild nature, there was no disease in epidemic form. The sanitary work of the colony is carried out by the City Council, who have also charge of roads, lighting and hygienic measures in dwellings, and the provision of water-supply.

BRITISH GUIANA.

Mr. O. Webber, Acting Assistant Colonial Secretary, in a report on the affairs of the Colony for the year 1923, states that the estimated population on Dec. 31st was 299,199 (151,960 males and 147,239 females). The birth-rates and death-rates per 1000 of the estimated population of each of the several races representing the community were as follows:—

	Birth-rate.	Death-rate.
Europeans other than Portuguese	11·3	11·9
Portuguese	24·8	30·4
East Indians	31·2	31·5
Chinese	33·0	22·9
Aborigines	31·0	29·4
Blacks	28·8	27·2
Mixed races	37·1	19·8

Of the births registered 4279, or 47 per cent., were legitimate, and 4830, or 53 per cent., illegitimate. The number of deaths of children under 1 year of age was 1609, or 177 per 1000 births.

The climate, although warm, is distinctly cooler than that of other British colonies in tropical latitudes, and Europeans and northern races enjoy consistently good health. The mean temperature throughout the year was 80·1° F., the mean maximum being 85·2° and the mean minimum 75·1°. The rainfall was 80·63 inches. The Colony, it is interesting to note, is the only British possession on the South American continent.

TRINIDAD AND TOBAGO.

In the report for 1923, prepared by Mr. T. A. V. Best, Colonial Secretary, it is stated that the estimated population of the two islands on Dec. 31st was 378,184. The white population is chiefly composed of English, French, Spanish, and Portuguese. The large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 122,362, and a small number of Chinese. The birth-rate was 34·70 per 1000 and the death-rate 20·89 per 1000. The number of deaths of children under 1 year was 1695. The death-rates per 1000 from the principal diseases were diarrhœa and enteritis, 1·39; malaria, 2·06; tuberculosis, 1·30; dysentery, 0·52; enteric fever, 0·38; ankylostomiasis, 0·67.

The year was a very healthy one, the birth-rate being high and the death-rate and infantile mortality reaching a low record for the colony. Venereal clinics on modern lines continue to be well attended at the out-patients' departments of the colonial hospitals, Port of Spain and San Fernando. On the recommendation of the Central Board of Health, drainage schemes for the control of malaria are being continued in the country districts. The intensive treatment of hookworm disease was continued by the Rockefeller International Board of Health. The Central Board of Health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The following hospital accommodation is provided: Colonial Hospital, Port of Spain, 340 beds; San Fernando Hospital, 123 beds; the Government District Hospitals in Tobago, and at Arima, St. Joseph, Tacarigua, Couva, Princes Town, and Cedros, 248 beds. There are also small temporary hospitals at Sangre Grande, Mayara, and Toco. The climate of Trinidad is tropical and may be divided into two seasons, a dry one from January to the middle of May, with an average rainfall of 2 to 3 inches per month, and a wet season from June to December with an average of 8 inches per month. The coolest months of the year are December to April. The average temperature during the day is 84° and during the night 74° F. The average rainfall in 1923, from records taken at 119 stations, was 70·24 inches. Hurricanes are unknown. The climate is healthy and by no means hurtful to Europeans, provided reasonable precautions are taken.

WHO WAS JACQUES?

To the Editor of THE LANCET.

SIR,—A question was asked under this heading in THE LANCET of Jan. 3rd, p. 60. I have ascertained that Messrs. Jacques, Coles, and Fanshaw were not in business for themselves, but were all employees of the existing firm of Messrs. William Warne and Co., Ltd., 29, Gresham-street, London, E.C. I am, Sir, yours faithfully,

W. A. DE B. MACLAREN,
Feb. 3rd, 1925. Editor, *The India Rubber Journal.*

MOULDS AND LAUNDERING.

THE problem of how to give woollen underwear a longer lease of life can hardly be looked upon as a line of research likely to prove immediately profitable to the manufacturer; but Mr. John A. Bolton, of the Chilprufe Mills, Leicester, whose investigations were recently commented upon in THE LANCET, takes the wider view that equally with him who makes two blades of wheat to spring where before grew only one, he who can make one woollen vest live the life of two is a benefactor to humanity. Mr. Bolton has recently summed up the result of his researches to date in a small brochure which, in spite of a somewhat flamboyant style, makes very interesting reading. The author has been able to demonstrate that even after the most careful laundering large quantities of foreign matter can be extracted from woollen garments. This foreign matter consists of a basis of calcium and magnesium soaps, together with moulds, bacteria, and odds and ends of all descriptions. It is to the moulds that the chief interest attaches; the author gives suggestive photographs showing the manner in which the wool fibres are split and destroyed by these fungi, and there can be little doubt that the phenomenon of "felting" of woollen garments and their subsequent decay is due to their activity. The calcium and magnesium soaps which harbour the moulds are formed in the process of laundering, partly from these elements excreted in the sweat and urine and partly from calcium and magnesium in solution in the water used. Being insoluble, they remain behind even after thorough rinsing. Their presence is apparently inevitable when ordinary soap is used. To find some economic substitute for soap which will not form these insoluble bodies is now the goal of Mr. Bolton's researches.

THE SPAS OF FRANCE.

WE have received a pictorial guide to the Spas of France, which has been edited by a medical committee of the Offices Français du Tourisme, whose English address is 56, Haymarket, London, S.W. 1. The guide contains an account of more than 80 French medical watering-places, together with clinical indications of the use of the water and general information of a practical character for the benefit of practitioners in advising their patients. The preface claims certain advantages for French spas and is particularly addressed to medical men, who will appreciate the classification of the various thermal stations as set out in the guide, the completeness of equipment and material organisation being used, more or less, as a gauge to the space allotted to detailed description. There is no doubt that there are health resorts, as in other countries, where at present the installation is imperfect; they may possess natural advantages, but are without complete installations or facilities for visitors. France is rich in mineral-water springs, and their variety in type provides a wide range of therapeutic applications, facts which have created in the French nation what may be called the spa habit. In addition to the more generally known stations there are numerous small ones scattered about the country which are used by the French people with great advantage to themselves, but which do not meet the needs of the foreign sojourner, unless he is prepared for the limitations. Then any of these may become the ideal place for recuperation. We recommend this compendium of agreeable health notes to our readers, believing that they may often find in it the precise sort of information they need for their patients.

HOME WORK FOR CHILDREN.

THE Medical Officers of Schools Association issued some time ago a questionnaire on home work dealing with (1) the number of hours of work; (2) time devoted to games; (3) whether home work was diminished—e.g., on medical grounds; (4) whether home work was excessive; (5) the presence of definite evidence of fatigue; and (6) holiday tasks. Replies were received from a small number of schools grouped under the following headings:—Boys' and Girls' Public Schools, Boys' and Girls' Secondary Schools, and a few Mixed Schools. The replies were analysed, but it has not been found possible to arrive at any conclusions of real value from them. Some of the hours per week appeared extraordinarily long, but fatigue was stated not to exist in some of the schools with the longer time-tables. Again, the classes of the schools were hardly comparable. There is bound to be evidence of individual fatigue both from work and games in any large school, but, so far as the evidence elicited from these replies goes, there did not appear any ground for supposing that it was present to any extent in the four classes of schools under consideration. The Council of the Medical Officers of Schools Association have decided, however, that a fuller and more detailed questionnaire would be required in order to obtain the necessary data. With this object in view they have appointed a small subcommittee to draw up and issue another questionnaire.

"YESTERDAYS."

AN unpretentious and intimately written little volume with this title, which possesses certain points of medical interest, has reached us from Messrs. Fleming, Revell and Co., of New York. The book is an autobiography of Mrs. Louise Seaman Bainbridge, the daughter of one of the first women to qualify in medicine in the United States and the mother of a well-known American surgeon. Mrs. Bainbridge records that her own mother was the wife of a large boot manufacturer in Cleveland, Ohio, and took a prominent part in establishing the first medical college in that State to which women were admitted, and at which she herself later graduated and finally became its president. Mrs. Bainbridge herself, as "Sister Ohio," was nurse in the Federal army during the American Civil War, when there were no trained nurses in the country, and has personal recollections of a meeting with President Lincoln. After the war she travelled widely with her husband and her young son, and has been able to recollect vividly and set down clearly events and scenes in many lands, notably in the Far East and China. The chief part of the work is a record of family life, but the descriptions interspersed give a general interest to a little book dealing genially with bygone days.

DONATIONS AND BEQUESTS.

As showing what a well-organised and systematic effort can do in aid of a local hospital by a committee almost entirely composed of working men and women representative of the various cotton mills in the district, £1321 was raised last year in aid of the Middleton and Districts Hospitals (Lancs), the basis of contribution being a penny per week by each worker in the local mills and workshops, who voluntarily submit to this sum being deducted from their wages. With other subscriptions the total amount collected was £1580.—The "Power of the Penny," otherwise the "Penny a Week" Workers' Fund on behalf of the Kent County Ophthalmic Hospital at Maidstone, amounted to £9000. The subscribers number nearly 50,000 and the total contributions during five years to this fund came to £39,000, or more than nine million pennies.—Legacies and donations amounting to over £4000 during the last month have been received by the Manchester Royal Infirmary, including legacies of £1000 from Mr. John J. Litton, £500 each from the late Mr. Karl Seige and the late Mrs. Elizabeth Smith, and £481 from the late Mr. William Parker; from the Radcliffe Central Committee £417, and from the Hospital Sunday Fund of Haslingden, East Lancashire and Heywood £369.—Mr. George Hill Dunsmure, of Chester-square, London, in the event of the failure of certain trusts, bequeathed £5000 to the Royal Infirmary, Edinburgh; £5000 to the Queen's Hospital for Children, Hackney-road; £2000 to the Edinburgh Longmore Hospital for Incurables; £2000 to the Edinburgh Hospital for Sick Children; and £10,000 to St. Bartholomew's Hospital.—Mr. Alfred Evans, colliery proprietor, Paulton, Somerset, among other bequests, left £5000 each to Dr. Barnardo's Homes and Muller's Orphanage, Clifton, Bristol; £2000 each to the Bristol Eye Hospital, the Bristol Royal Infirmary, the Bristol General Hospital, the Alton Cripples Home, and St. Dunstan's Institute for the Blind; £1000 each to Paulton Cottage Hospital, Chorley's Homes, Canonbury, London, and to Bath United Hospital.—Miss Edith Martha Hales, Hove, left £58,796. After the fulfilment of a number of personal bequests, she gave the residue of her property, which will ultimately exceed £40,000, to the General Lying-in Hospital, York-road, Lambeth, the Society for the Prevention of Cruelty to Animals, and the Cancer Hospital, Fulham-road.—Miss Mary Eleanor Robinson, of Holmfield, Aigburth, Liverpool, left £500 each to the Royal Southern Hospital and the Home for Female Incurables, Liverpool.—Mr. David Moseley, J.P., of Buglawton Hall, Congleton, indiarubber manufacturer, Manchester, left £1000 to the Hospital for Skin Diseases, Manchester.—Mr. Adam George Rankine, J.P., of Hoylake, left £500 to the Liverpool Maternity Hospital and Ladies' Charity, £250 each to the Sheltering Home for Destitute Children, the Hoylake Day Nursery, and the Hoylake and West Kirby Cottage Hospital.

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